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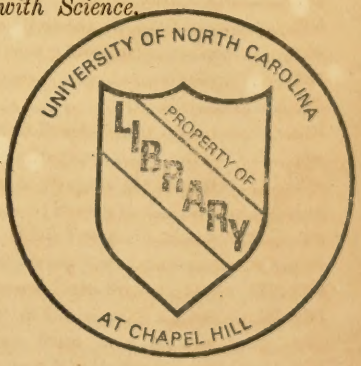

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"JANIE WYLIE GRAPE."

THE

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Beet Culture for the South.

The accompanying interesting extract is another practical instance of the advantages of science to agriculture and the production of wealth, which must strike every thinking patriot. Such examples, it is hoped, will spur on our people to the adoption of some plan of useful practical scientific education that will carry home conviction to every man, and lift our State out of the difficulties in which we are floundering.

Line upon line, precept upon precept, appears to have but little effect so far as action goes. Our people cry out poverty. The press, on the other hand, teems with twaddle about astonishing prosperity. My impression is that Carolina is actually in a worse pecuniary condition than she has been since the surrender, and so may expect to continue with a downward tendency.

We meet in conventions, pass resolutions, disperse, and things remain in *statu quo*, whilst emigration, as well as I can judge, is increasing. The press of the country is filled with more than useless empty political discussions, as in times long passed, to the exclusion of that kind of information for the want of which the people are fast sinking into despair.

The time is always opportune for that which is essential and possible, and I hold that the State never was in a better condition to lay the foundation of all prosperity than she is at present, if our good people could be made to understand their interests and their true position.

On several occasions I have spoken of the beet, and the marvellous change that it has inaugurated in Continental Europe,—the result of the application of science to art. I recapitulate some of the advantages.

We can raise in our climate two crops in a year. Our land has been scarred and impoverished, and thrown out for time to enrich or further waste. Here is a remedy that will pay largely from the outset; increase the fertility as no other crop that I know of has ever done, besides increas-

ing immeasurably our capacity for raising stock—always a most important adjunct to every farm—improving size and quality, in which we are so deficient.

Much has been said about the manufacture of sugar from sorghum, imphee, etc. It will be remembered that those plants are most impoverishing, whilst the *bagasse* (cane from which the juice is expressed) is utterly useless, being of no value for making manure or anything else. The leaves of the beet and the pulp, from which the juice has been extracted, are both eminently nutritious, as is attested by the amount and quality of stock which they sustain and fatten. The pulp of the beet, after the sugar has been extracted, may be kept for years intact with little or no care or expense.

The cultivation of the beet may not be suited to every part of the State, but there are portions where the soil and climate leave nothing to desire. Indeed, with irrigation, the probability is there is no land within our limits which might not be adapted to it.

The cost of machinery might be an impediment to its introduction on small farms, but we doubt if even that would exceed what is necessary for making sugar from sorghum. The difference being rasping the beet instead of pressing the cane. Nor would it be necessary that each farmer should go to the expense of erecting the machinery for making sugar. One establishment of that kind would suffice a neighborhood, and the farms around would naturally supply the manufactory, as is done in France, Belgium and Germany. Capitalists and companies erect manufactories, depending upon farmers to raise the root, and the stockholders of these companies are often the farmers themselves; in short, that point can offer no difficulties.

Of course, it is not unimportant what variety of seed is used; that found the most profitable in Europe is the white Silesian.

Will not some intelligent planters make the experiment, and become benefactors to the State?

I perceive that I close instead of beginning with my text. Here is the extract which led to the above remarks:

"The prize of Argentenil of twenty-four hundred dollars ($2,400) for the most useful invention during the last five years in France, has been awarded to Mr. Champonnois, the inventor of the distillation of alcohol from the beet root. Some idea of the importance of his discovery may be obtained by comparing the following figures: Before the alcohol was distilled from the beet root, 4,867 acres of land, carrying this crop, were under cultivation, the proportion of wheat grown to the acre on this land being fifty-three bushels; the number of cattle supported being 25,386 head; the number of cattle fattened being 6,955 head; and the number of workers employed being 16,618. Since Mr. Champonnois' discovery, the number of acres of land devoted to the cultivation of beet root, divided into five hundred farms, has increased to 53,512 acres; the yield of wheat per acre, to seventy-four bushels; head of cattle supported, to 51,449; head of cattle fattened, to 46,656; number of workers employed, to 40,453. 735,000 tons of beet root, yielding 6,468,000 gallons of alcohol, at the average rate of two francs and twenty-five centimes per gallon, produce a gross annual income of $2,911,000."

In the above statement alcohol, in France, is quoted at two francs and twenty-five centimes, (less than forty-five cents per gallon.) Here, common or ordinary whiskey is selling at from one to three, and even more, dollars per gallon, by wholesale; and alcohol, of course, is greatly above these prices.

To make the figures in the above extract even more striking, I will repeat, from my report to the Agricultural and Mechanical Society, what the beet had already done for France before the invention of Mr. Champonnois:

"The northern part of France was, at no very remote period, the least remunerative portion of the empire. The average production of wheat was about twelve bushels to the acre; the product now averages about forty-five bushels, and that region supports large herds of cattle, unsurpassed in size and quality, with corresponding amelioration in the condition of the population. This revolution has been effected through science, by the culture of the beet, and the manufacture of sugar from that 'Providence,' to use the words of her distinguished statesman, Monsieur Thiers, 'the beet has at three separate periods saved the empire.'"

France is no longer dependent on the exterior for sugar; she more than supplies her own consumption.

"The cultivation of the beet has spread from the north of France south and into Germany, Poland and Russia; and will probably supersede with advantage the turnip culture in Great Britain.

"This amelioration has been effected by the latent local resources of the soil, without recourse to costly, extraneous fertilizers, which are ephemeral in their action, and to the nation of doubtful expediency."

THOS. G. CLEMSON.

Pendleton, Anderson Co., S. C., August 16th, 1870.

Suggestive Experience in Farming.

In compliance with a promise made sometime ago, I now give you, for The Rural Carolinian, a brief account of some farming done by me in Union District before the war.

The largest yield of wheat I made was in 1854; the land being a piece of old field of seven acres, on which there was a crop of wheat the previous year, the same being cultivated in the usual style without manure, but perhaps with a little more care in preparation; the return for that season being ten bushels per acre.

On removal of this crop of wheat in June, 1853, I had the land thoroughly ploughed, with a double horse plough, turning in the wheat stubble to the depth of eight or nine inches. About the end of July, I cross ploughed fully as deep, then harrowed twice; after which I drilled the land for turnips, applying at the rate of two hundred and fifty pounds of good Peruvian Guano to the acre. This was put in the furrow and covered with the two-horse plough, after which the beds or rows were rolled down, so as to make a flat surface for the crop. The seed proving very bad, however, and the stand

inferior, I determined on putting the field in wheat. With this view, I again started my large plough, and by the end of August had all ready for seed. The ploughing was done this time about nine inches deep, completely turning in a most luxuriant growth of weeds that had taken the place of the turnip crop. I then sowed, in the first week in September, at the rate of one bushel of wheat to the acre, the variety being the Mogul, a large-grained white wheat, then common to that section of country. The wheat was harrowed in by giving it a couple of streaks with a good sharp-toothed harrow. The stand was fair, and during the winter tillered remarkably well, indeed, so much so that I feared it would be too thick. When full grown it stood about five feet high all over, and notwithstanding the destruction of nearly an acre, by rice-birds, the yield was three hundred and sixty-seven bushels of as fine wheat as I ever saw, (weight sixty-five pounds per bushel,) or, say fifty-two and a half bushels per acre.

Being anxious to try a crop of Ruta Bagas, I again prepared the same field in June and July, 1854, and sowed during the first week in August. This time I had a good stand, and what was considered by my neighbors a very fine crop, though a severe drouth in September prevented the yield being so abundant as it at first promised. In November, I purchased one hundred wethers in the mountains of North Carolina, at one dollar per head, costing delivered, one dollar and twenty-five cents, which I fed on the turnips, by penning with hurdles—giving say half an acre at a time—with a little hay in a portable rack, and I have never seen a lot of sheep do better. Seven weeks afterwards they realized me four dollars per head, and were pronounced by the butcher the most uniform lot of fat sheep he had ever purchased in the country. The one hundred wethers referred to only got half the turnips, every other row being drawn for the use of my cattle.

The succeeding spring I had this field again ploughed as deeply as possible, with a two-horse plough, followed by a long, sharp bull-tongue, reaching altogether to the depth of twelve to fourteen inches, and on the first of April planted in corn. The yield was extraordinary, and though not carefully measured, could not, by calculation, have been less that seventy-five bushels per acre. Wheat followed this crop, sowed in November, and clover harrowed in with the wheat; but the crop being sowed too late the yield was not so heavy, though still very fine. The stand of clover was all that could be wished, and for the two succeeding seasons most excellent crops of hay were got. Having tested the value of these crops, and seeing how well they are adapted to our soil and climate, I gradually increased their cultivation, and could have shown (before the war) as fine clover fields in the upper part of Union District as could be seen in Tennessee or Kentucky.

I am therefore of opinion that the planters, not only in the upper part of the State but in the lower section also, would not only improve their lands, but their circumstances also, by adopting a regular rotation of crops, and can (from experience) confidently recommend the following: The five course rotation—cotton on one-fifth, corn one-fifth, oats, wheat, barley or rye,

one-fifth, (sowed down with clover in October, south of Columbia, and in September north of it;) clover one-fifth, and the remaining fifth in pasture. By this method it would be found, that on taking up the fifth in pasture, and turning in a heavy growth of clover or Crab grass, in September or October, there would be no difficulty in getting a fine tilth for cotton in spring; besides, if ploughed deeply, the work well done and the grass thoroughly buried, there would be no necessity for an expenditure for fertilizers; and I am confident the yield of cotton would be double of that to be expected by the old method, whilst the succeeding crops of corn and oats would be increased in the same ratio. The oat crop, however, ought to have a liberal allowance of a good fertilizer, so as to start the young clover, and give it strength to stand the winter.

At some future period, I may give you my views of underground drainage, one of the grand and most necessary experiments in our low country.

Ashley Barony, August 19th, 1870. A. M. LATHAM.

[We take pleasure in placing before the readers of this journal the foregoing very interesting communication. There was a time when the flour consumed in Charleston was chiefly supplied from the interior of the State. Camden flour is still remembered by our older citizens for its excellent quality, and Mr. Latham shows that wheat can still be cultivated with success in South Carolina. There are lands in the middle and upper portions of the State, and in the adjoining States, so well suited to the culture, that it may, with reasonable attention, be made one of the staple productions of the South, taking its place by the side of cotton, rice and Indian corn. Fifty-two bushels to the acre compares with the best wheat-producing countries in Europe. There are soils in England that yield, under high cultivation, seventy to seventy-five bushels to the acre, but there are others that fall below twenty, and the average does not exceed in the most favorable seasons, thirty bushels to the acre. In the United States, the highest average yield of any of the States in 1867, was seventeen bushels to the acre in Connecticut, while many of the States did not yield over six bushels. If fifty-two bushels can be made to the acre with not more labor and care than is given to the cultivation in England, and other wheat countries in Europe, might we not reasonably look for a similar average, if all would adopt Mr. Latham's system? But the Southern Atlantic States have peculiar advantages in the production of wheat. In the first place, Southern grown wheat brings at all times higher prices than the wheat grown in more Northern latitudes. Secondly, it matures six weeks earlier than the Northern, and two months earlier than the English wheat, so that as *new wheat* in the markets of this country and England, it would command always ready sales and full prices for mixing with the old stocks of flour. And, lastly, these wheat sections of the State lying within two hundred and fifty miles of our seaports, the cost of transportation to a market would be small as compared with the Western

grown wheat, where the cost of transportation to the nearest ports on the seaboard not unfrequently absorbs one-half of the price when sold.

We have confined our remarks, suggested by Mr. Latham's article, to the wheat culture; but his letter is of equal importance and interest in relation to Indian corn, turnips, hay, and the keeping of sheep. His suggestion as to the rotation of crops deserves especial attention.—Ed.]

Bene and its Uses.

The Bene plant, (*Sesamum orientale,*) is the *Sesame* of the ancients, and was introduced into this country from Africa by the negroes.

The seeds of the Bene plant are very rich in oil, one hundred parts of the former, it is said, producing ninety of the latter. It is becoming an object of considerable commercial importance, being used as a substitute for Olive oil. In medicine, it is prescribed as a laxative, and is preferable to Castor oil for this purpose. According to Mérat, the Egyptians drink large quantities of it morning and evening to give them *embonpoint*. The seeds are also

used in broths and in making candy. The leaves abound in mucilage, and one or two stirred into half a pint of water will produce a bland drink very useful in diseases of the bowels. The leaves should be freshly gathered.

The cultivation is very simple, and the plant will thrive on the lightest soils. It grows to from two to three or four feet in height, and each stalk and branch is densely crowded with pods, yielding twenty bushels or more of seeds to the acre. Our drawing was made from a specimen taken from our own garden. See remarks on the cultivation of Bene in THE RURAL CAROLINIAN for March, 1870, p. 351. A few stalks, at least, should be grown in every garden, and we believe it can also be made a profitable field crop.

Crops in Spite of Drouth.

Can we make cotton, corn, wheat and clover in spite of drouth? Is it possible to so guard against the vicissitudes of seasons as to make crops a certainty? We have great faith in the power of human skill, guided by science and backed up by industry, but we are hardly prepared to say that we can yet, in all cases, wholly protect our crops from injury from either excessive drouth or excessive rain, though we can certainly do much toward it. That able agriculturist and agricultural writer, Hon. C. C. Langdon, of Mobile, Ala., however, takes the ground that we *can* ensure ourselves against the effects of drouth, as well as too much rain, by deep ploughing, thorough draining and judicious manuring; and ventures the assertion that, in a good, fertile soil that has been thoroughly and closely ploughed, and the ground completely pulverized to the depth of two feet, [But how is this to be made generally practicable?] the crop will not suffer from any drouth we ever have in this climate, severe as they sometimes are. He adds:

"In a soil thus prepared, the roots not only descend without obstruction to a depth sufficient to be beyond the reach of the burning atmosphere, but the moisture from below it is raised to the roots by *capillary* attraction in time of drouth, while, in seasons of too much rain, the water is made to sink below the roots by the attraction of *gravitation*. A familiar illustration of the *modus operandi* of these important and interesting agencies is thus given: 'If you immerse a compact loaf of sugar in water, it will require many minutes for the fluid to penetrate through all its parts; but, if you reduce it to powder before applying the water, it will be saturated in a few seconds. Just so it is with the earth. If you break it shallow, and leave it in clods, it will be slow to absorb the moisture from below; while, if you plough it very deep and close, and thus separate its particles thoroughly, it will, like the pounded sugar, take up the moisture with very great facility.' Every year we hear complaints of injury or destruction of crops by drouth. It is time for the intelligent farmers of the South to understand that all this is the result of a defective system of culture, and that it is entirely within their power to guard against any such calamity. Examples are numerous of the entire success of the system, and it is founded in reason and sound philosophy. There is nothing at all mysterious about it, and nothing to prevent its universal adoption by the farmers of the entire South."

Every season, in more or less extensive regions of country, crops do suffer terribly from the effects of drouth, and there are opportunities afforded to test the value of deep ploughing and subsoiling, of which every farmer who desires to improve our agriculture and make farming a more certain and highly remunerative business should avail himself. A writer in the *Western Rural* gives the following account of an experiment in subsoiling:

"I took twenty-two acres of gently rolling land, equally well drained by natural drains or ravines, all of which had been in cultivation from thirty to thirty-five years, and pretty well worn. I subsoiled eleven acres. This portion had never been seeded to grass of any kind to my knowledge—at least, not for many years. The other eleven acres I ploughed the usual way; that is, what would be termed shallow ploughing. It was all planted about the same time—cultivated as near alike as could be with cultivator. No hoeing was done on either piece. I think both pieces of land had previously about the same attention, as regards manure and tillage, except that the part I did not subsoil had the advantage of a good stiff sward of clover and timothy turned under the preceding spring, after being seeded three years. The result was, that I took from the part ploughed the ordinary way and not subsoiled, but ten bushels to the acre on the average; while from the part which was subsoiled, I took thirty-five bushels per acre as an average."

This is a single case, and seems to be conclusive of the benefits of the deep stirring of the soil under the conditions then and there existing, but nothing is said about drouth. The experience of David Dickson and others, who plough deep and get good crops every year, whatever the season, are cases more in point, but some planters have ploughed deep, subsoiled and cultivated thoroughly the present season, and yet have had their crops burnt up. Did the drouth do it, or did the effect result from the injudicious application of caustic fertilizers? Let us not be too hasty in drawing conclusions from isolated facts, but try to get at the truth by means of repeated and careful experiments.

Coffee and Coffee Culture.

The name of coffee properly belongs to the beverage made from the seeds of any plant, roasted, ground and infused in boiling water; but in the course of time it has become attached to the seed of a particular tree, which has been found to produce the best and most palatable coffee.

What is now known as the coffee tree is indigenous to Abyssinia; and in that country the roasted berry has been used as a beverage from time immemorial; but it was not until A. D. 1554, that it was introduced into Europe, where it was first used in Constantinople. Here, its use, however, strangely met with violent opposition from the priesthood, on the ground that the roasted berry was a kind of coal; and the use of coal, as food, was prohibited in the Koran. But in spite of all the opposition, and invectives of the priests, it soon became a public favorite, and an article of very general consumption.

From Turkey coffee was introduced into Paris about 1660; about which time, also, it made its appearance in England, where again it received very strong opposition from the clergy, who denounced "the black broth to be an invention of Satan." But the beverage possessed a fascinating attraction, which no opposition could overcome, and it soon got into general use. Since that period the consumption of coffee has steadily increased, until now probably 125,000,000 of the human race use it daily—not as a luxury, but as a necessary of life.

The consumption in these United States of coffee, of all kinds, for 1868, was about 241,000,000 pounds, which would allow about seven pounds per head, per annum, for the 35,000,000 of their coffee drinking populations; an average nearly three times as great as that of Great Britain. Of the whole consumption of this country, that of the Southern States, for their white populations, is proportionately much greater than that of the North and the West, as coffee is essentially a beverage of warm climates.

Coffee is undoubtedly one of the most powerful modern civilizers of the world. The strong effect which the beverage has upon the human system, in increasing the frequency of the pulsations of the heart, and the consequent rapidity of the flow of blood to the brain, furnishes this last organ with more nourishment, and thereby gives it greater strength and compass, and consequently increases the wisdom, influence and power of mankind. This action upon the brain also removes all sensation of sleepiness and fatigue, and therefore makes it a great favorite with students. The heating influence, which coffee has, enables the human system to resist cold and dampness, and particularly the miasm of malarious districts. It also takes the place of ardent spirits, to a great degree, and has a strong influence in checking intemperance. And particularly is it said to have valuable medicinal qualities. Its very general use in Turkey and France is supposed to have much abated the prevalence of the gravel and the gout; and, in fact, in those two countries, these diseases are now scarcely known; and in this country, also, the beverage is largely used for rupture, and found to be very beneficial.

The constituent of coffee, known as caffeine, has the remarkable effect of diminishing the constant waste and decay which goes on in the human system. This constant drain upon the system requires constant reparation, which is obtained only from the nourishing food received. Now, as the caffeine of coffee lessens this waste, it also lessens the necessity for the food to repair it. It is in this respect that coffee takes the place of food; not that it, as generally made, contains much nourishment in itself, but that it removes much of the necessity for food.

In the preparation of coffee for use, on no account should greater heat be applied to the roaster than sufficient to give the berry a light brown color, as the value of the beverage consists greatly in the amount of volatile oil which it contains, and which is generated only in the process of the roasting of the

berry, and which is destroyed when the berry is burned.* To obtain strong, nourishing, and highly flavored coffee, a little soda should be added to the water, with which it is made, or it may be mixed with the ground berries, in the proportion of forty grains of soda to one pound of coffee. The berry contains about thirteen per cent. of nutritious gluten, which is insoluble in pure water, and is usually thrown away in the grounds, but is readily dissolved by the use of soda.

The cultivation of the coffee tree is nearly the same in all parts of the world. The berries are planted in hot beds, and when in the course of three or four months the young plants are about six inches high, they are removed to the fields, where they are placed about seven feet apart. The growth is rather slow, but for the first two years the plants need only to have the ground around them occasionally ploughed and kept free from grass. Dry soils and elevated situations are most suitable for them, and when favorably located they will by the third year be about four (4) feet high, and commence to bear. Each passing year will add to their height, until they reach from ten (10) to twenty (20) feet, according to circumstances of climate and soil, when they will produce from thirty (30) to fifty (50) pounds of berries annually. The trees are covered with a smooth, dark green and shining foliage, and are very handsome and graceful. During nearly the whole year the bloom continues, and the pretty white blossoms, growing close to the stalks, are often seen in juxtaposition to the matured fruit. The fruit resembles a very large cherry, and is composed of a shell containing two kernels, and enclosed in a soft and juicy pulp. The harvest season extends from December to April, inclusive; and the fruit, when gathered, is slightly dried and then passed through a mill, by which the pulpy substance is removed. The remaining shells, containing the berries of commerce, are then passed through another mill, by which they and their contents are separated. The berries are then again well dried and carefully cleaned, and assorted by hand labor, sacked, and made ready for market. The quality of coffee depends greatly upon the character of the soil and climate of the country in which it is grown—that grown in a warm climate and very dry soil being the most highly flavored. The quality may be, however, much improved by keeping the berry for some years; and it is asserted that if the lowest grade of Rio is kept for ten years, it will equal in flavor and softness the best Mocha.

The soil and climate of the most southerly of the Southern States are well

* The proper roasting of coffee is a matter of much more importance than is generally supposed. A strong decoction of raw coffee has the most terrible effects upon the human system, and imperfectly roasted coffee is proportionally hurtful. If roasted too much, on the other hand, the flavor, aroma and other good qualities of the berry are injured if not destroyed. Our contributor's directions for roasting are not sufficiently definite. The proper moment to remove it from the roaster is *when the oil begins to appear on the outside of the berry.* It should then be put into a vessel and covered closely while cooling. It should be kept after roasting in glass jars, which can be closed air-tight, as it soon loses much of its flavor if exposed to the air.—Ed.

adapted to the production of coffee, and as it is to the interest of our people to encourage all diversity in agriculture, it would be well if our planters would import some of the unshelled berries, and try the experiment of the cultivation of this article. The yield per acre is enormous, and its cultivation may prove very remunerative. Let our planters give coffee their attentive consideration.* F.

What is Orchard Grass?

Orchard Grass. (*Dactylis glomerata.*)

I see a great deal in THE RURAL CAROLINIAN, and other agricultural papers, about Orchard Grass. What is it like? How am I to know it when I see it? I wish you would give drawings and descriptions of the various grasses, so that we may know whether we are reading about a new grass, or an old one under a new name. M.

[Such descriptions and drawings would be very useful, and we hope in time to supply the want our correspondent, as well as others, now feels. As a beginning, we give here a cut of the Orchard Grass, which will, we think, enable our readers to identify it when seen. Flint describes it as follows:

"Flowers in dense clusters; stem erect, about three feet high, in good soil sometimes five feet; leaves linear, flat, dark green, rough on both surfaces, which, with the fancied resemblance of its clusters to the foot of a barnyard fowl, have given it the common name in England of Rough Cock's-Foot. Root perennial. Flowers in June and July," (at the North.)

It makes an admirable mixture with Clover, but on account of its early ripening should not be mixed with Red Top for a hay crop.—ED.]

* Our contributor's description of the interesting plant which furnishes so important an article of commerce and so delightful a beverage, will be read with pleasure by all, and some of our patrons in Florida may turn its practical suggestions to profitable account; but we are confident that the writer is in error in supposing that coffee can be grown in the open air anywhere in our country, except south of the *frost line* in South Florida.—ED.

Farm Accounts.

At a meeting of a certain agricultural society, a discussion arose as to the profitableness of growing corn. An intelligent farmer of long experience in the cultivation of the crop arose to advocate corn planting, but the best thing he could say was, in effect, that he had grown corn for many years, had produced so many bushels to the acre, and had generally thriven. He concluded by saying that he should continue to plant corn, and had no doubt his brother farmers would do the same.

This man had made good crops of corn, but how much had it cost him to make them? Had he thriven by means of corn planting, or in spite of corn planting? His little speech was not convincing, because such questions as these were ignored in it. The fact was, he had done, as others are now doing, grown various crops, all of which went in together, and at the end of the year he found a balance on the right side. He had kept no account by which he could tell how much his corn crop had contributed to this result, or whether, in fact, it had contributed anything.

This loose way of farming should be abandoned. A system of accounts should be adopted by which the farmer shall be able to tell at the end of the year not only the amount of his gains or losses, but just where these gains or losses have occurred. Suppose, for instance, he first divides his farm into sections, numbering or naming his wood lots, fields, pastures, and dwelling house and lot, for convenience sake. He then estimates the value of each, fixing the same proportionate to the whole. He opens an account with each one, charging to each its valuation. He also opens an account with his stock, his vehicles and tools, charging to each its value. He must, of course, keep a cash account, and charge or credit to some one of his various accounts every cent he pays out or receives.

He charges to each field expenditures for seed, manure, and labor, for share of tool account, and each day's work of himself or his oxen for planting, cultivating, and harvesting. If he sells his crop, he credits the cash received. If he stores it for family use, or to feed his animals, he charges it to family expense, or to the stock account, at whatever he could have sold it for. After the crop is cleared he estimates the value of the field, making allowance for whatever gain or loss in its condition and crop-bearing capacity may have occurred since the previous valuation, and the balance of the account shows what has been made or lost from that section of his farm.

The balances of his various accounts taken in detail, show just where he has made or lost money; and if the same or similar results follow the operations of successive years, he is thereby warned, and can profit by the experience. From these accounts he can calculate, with unerring certainty, the exact cost of everything produced, including even interest, taxes, and repairs of tools. He has the entire business tabularized, and can at his leisure, during winter evenings, march his columns in review before him, and study to some purpose to reduce costs and save expenses.

What is Rational Cultivation?

The United States is not the only country where decreased production and worn-out lands are beginning to admonish the farmer that retribution always follows the transgression of nature's laws, even when dealing with clods of inert soil. At a late meeting of the Victoria Agricultural Society, at Heidelberg, Australia, Mr. Josiah Mitchell, of the Royal Park Farm, as reported in the *North British Agriculturist*, called attention to the fact, that what he called "the American system," where "the settler subdues a piece of land, flogs it to death and abandons the carcass, and then repeats the operation on a new subject," a system that has been condemned by thinking men in all countries, is in full force among the British Colonists there; indeed some, it would appear, have already managed to compass the death of the first victim, and are seriously setting to at the second, there being an exodus of farmers from already exhausted districts of South Australia, coming to Victoria to take the benefit of a recent land bill, and, of course, to pursue the same system there that has led to the necessity of their leaving South Australia.

In view of these facts, Mr. Mitchell inquires how this ruinous course of action is to be stopped and a wiser system substituted, and comes to the conclusion that it must be by diffusion of knowledge through Agricultural Societies and Farmers' Clubs. As a step in the right direction, he read before the Society a very excellent address on "Rational Cultivation," from which we make a few brief extracts:

WHAT IS NOT RATIONAL CULTIVATION.

In the first place, then—the growth of the same crop year after year on the same land, "wheat after wheat" for instance; the production of successive grain crops without any manure, and with only an occasional bare fallow when the land becomes foul; burning straw instead of converting it into manure by the aid of stock, and restoring it again to the land; the laying down of land to grass after it has been exhausted by the growth of grain—these are some of our practices that are not rational, because opposed to the laws of nature—rotation and restitution—which govern the growth of plants and the continued fertility of the soil.

ROTATION OF CROPS.

Rotation, I have said, is a law of nature that governs the growth of plants; it compels change of soil or situation. No plant will thrive continuously on the same spot. This applies as well to oak and pine forests as it does to wheat, oats, or any of our cultivated crops. The necessity for rotation or change of crop is caused partly by exhaustion in the soil of elements essential for the healthy growth of the plant, and partly in consequence of the excretory matter thrown off by the roots, rendering the soil unfit for its further growth. Yet one plant by its death and decay from these causes, makes the most suitable preparation for the healthy growth of some other plant belonging to a different order. In this way the great globe we inhabit has been converted out of barren rocks into the thing of beauty we now see it, and became fitted for the sustenance of man. It is upon this law, that the modern practice of British agriculture is founded, and no system of cultiva-

tion can be deemed rational if it does not embrace some rotation of crops. I need only instance the well-known success of wheat grown after peas, beans, or clover, to illustrate the advantages of rotation.

RESTITUTION OR COMPENSATION.

In conjunction with rotation we must also have restitution, or compensation, if we would maintain the fertility of the soil and avoid barrenness. Restitution and rotation should be the watchword, the creed, not merely as a matter of faith, but the every day practice of all who desire to cultivate rationally. We cannot go on ploughing and sowing, reaping and mowing, taking all away, and giving nothing back to replace the mineral substances removed from the land. We cannot, I say, long continue this system of robbery, even with some sort of rotation, without being brought face to face in the long run with one of these two alternatives, restitution or barrenness. The time, of course, will vary with the quality of the soil, but the end must come. How little this inexorable law of restitution seems to be understood, or, if understood, how much we by pursuing our present exhaustive practice seem to disregard it. Yet it is no light matter, but one fraught with serious consequences to any community where a system of spoliation is carried on, instead of rational cultivation.

BEGINNING AT THE WRONG END.

In colonial agriculture generally the natural tendency seems to be to begin at the wrong end. Instead of starting from grass and the depasturing of stock, the production of grain is made the starting point. By the continued production of grain alone, the land becomes exhausted, and thereby unable to produce grass except of the most worthless and innutritious description. Now, the rational course would be to start from grass as a basis, and in conjunction with this, through green crops, stock, and manure, advance to grain; then, in the course of any rotation, back again to grass. The laying down of cultivated land to grass, after a course of cropping, may be likened to putting it to bed; of course the more comfortable we make it the better it will rest, and consigning it for a time to "Nature's sweet restorer, balmy sleep," which, if I may be allowed a slight liberty with poetic diction,

> Swiftly on dewy pinion flies from fields
> Of woe, too often cropp'd with golden grain,
> And lights on slopes unruffled by a plough.

The bare fallow is like poking up the fire to make it burn away all the faster. But a green crop put in with plenty of good muck, and fed off on the land, is the true "roast beef of old England," and will be followed by plenty of bread and cheese and beer.

A Rural Review.

The "darkies" have gone off to-day to a pow-wow at the village, and I am *hors de combat*. I don't know how I can employ my leisure more pleasantly than by indulging in a talk on THE RURAL. Your September number, just at hand, informs me that you have closed your first year, and feel pretty well satisfied with the result. I think that you deserve success. THE RURAL has regularly improved, in matter and manner, and should be in every farmer's household.

An experience of forty years, in agricultural reading and writing, has convinced me that the benefits derived from agricultural journals mainly depends upon their conservatism. Rural gentlemen are rather fond of humbug; their comparative isolation makes them easy victims, and they are far more often carried away by the glowing account of some visionary enthusiast, than by the plain practical statement of a man who knows exactly what he is talking about. If readers would bear in mind the old proverb that "one swallow don't make a summer," they would not be led astray so often by successful *experiments*.

Now, if you can make your journal the medium through which practical men can reach the people, and induce your correspondents to ask questions and discuss freely, but courteously, the opinions of each other, you will find your subscription list extending, and your conviction becoming daily stronger that you are engaged in a glorious work, which every year will bear better fruits.

"Experience in Hedging." I have not much faith in hedges on a large scale in our climate. Mr. Graves has pointed out the main difficulty—they *will* die out. Insects are constantly attacking them, and we have no remedy. That cactus has a formidable look, and may do down South. The old worm fence, however, will be very apt to be the fashion as long as a rail tree can be found, and the negro is the laborer.

"Farm Life in Brazil" is interesting, but we have a great objection to Brazil—to all tropical countries—in short, it is too easy to live. The land is altogether too *rich*, and the climate too well adapted to make and keep one lazy.

"Sugar Farming in Louisiana." Glad to find Mr. Johnston feels an interest in looking back at the old State. It is gratifying to know that sugar growing on a *small scale* can be made profitable. I am not so sure but that it is the only scale adapted to free labor.

"Two Sides to Every Question." All right; but how few of us recognize the force of "*Audi alteram partem.*" My experience with clover has been very unsatisfactory. I would go it swimmingly for a few years, and then would come drouth, (I protest against drouth,) and hot suns, and sirocco winds, and away went my clover. I am sadly out of heart; but "it will never do to give up so, Mr. Brown," so I will try it again. As to subsoiling, my experience is, if you have not a sufficiency of *sharp sand*, to sift through into the clay subsoil, so as to keep it from running together again, subsoiling won't pay.

I find a general outcry in my section against the use of phosphates and guano. The drouth has burned up, with a sort of rust, the cotton on all the black-jack lands.

"The Best Depth to Sow Wheat." These "pikters" are very suggestive; so that "he who runs may read."

"Scarlet Clover" ran out with me directly. Mr. Long's hints are worth noting—*apropos:* "Rust in Wheat." All humbug. It is sheer nonsense to

talk of any preparation of the *seed* preventing a rust on the blade or stalk, which is manifestly attributable to insects or climatic disturbances.*

"Dr. Wylie's Hybrid Grapes." Mr. Ravenel has given us a very interesting letter, (no unusual thing for him,) and Dr. Wylie deserves all that is said of him. I have tasted some of his grapes on the original vines, and can speak from experience. How Dr. W., in the intervals of a laborious and extensive practice has achieved so much is a wonder. By the way, while talking of Dr. W., what has become of his *ad interim* fruit committee which he was so anxious about last fall? The which question very properly brings us to "Apple spotting." Mr. Wilkes has given us a very suggestive letter—failures everywhere, and the sooner we begin to look the thing in the face the better. Dr. Wylie, in attendance upon the American Pomological Convention last year, at Philadelphia, learned that the failure of fruit was, at the North and West, almost universal, and that Northern pomologists were now turning their eyes to the South for new varieties to begin *de novo*. The most intelligent fruit growers had become satisfied that seedlings were the only safety-valves. We have been pushing nature too rapidly, and in our anxiety to propagate early and improved varieties, we have got broken down constitutions and diseased fruits.

In my orchard the R. I. Russet always rots. This year the English Golden Russet has rotted for the first time. The Shockley generally rots. Clark's Pearmain, generally a very sound fruit, has spotted very badly this year. The Neverfail rots badly every year, and this year nearly all my trees have spotted apples; but the borer I find, of all troubles, the greatest and most indomitable. I was talking with one of the most successful pomologists of the county a few days ago. He expressed himself out of all heart; the curculio had destroyed his hopes of nectarines and apricots; the borer had ruined his peach and apple trees; and the blight finished his pears. He was going back to seedlings for relief.

"Southern Fruits." Everything from Mr. Berckmans bears the mark of candor and observation.

"Light Draft and Saddle Horses." Very sensible, barring "the hind legs unfettered;" that's strong. Every farmer should try to keep up his own stock.

"Cabbage Insects." Of all the pests the harlequin, or, as we have heard him called, terrapin bug, is the greatest in a garden. We would be glad to see your Entomological Department expanded. The bugs are going to be the death of us, for the darkies will kill all the birds.

"Improved Implements." Colonel Aiken is exactly right. He hits hard licks, but they generally are centre pops. We are paying too much for our whistle, and we are trying to whistle too soon.

The country is not ready for Buckeyes and "sich traps." A great many

* Our good friend "G." may be right, but we had supposed it a well established fact that rust in wheat is a fungoid growth, the seeds of which may be disseminated with the grain.—Ed.

things must undergo reconstruction before we can take it easy and cultivate a crop with gauntlets, under an umbrella with one of your "pikter" spans ahead of us. We must content ourselves for awhile with the illustrations—*they* are very pretty, and don't cost much.

"Rats do not Immigrate into Empty Barns." Capital. Mr. Williams has solved the problem—put 'em to eating cotton; that is the idea.

There is no doubt but full barns and smokehouses, cheap living and cheap lands, would draw, but I fear "Ephraim is joined to his idols."

"D. W. A.," in his remarks on "What is the Best System of Making the Greatest Bulk of Valuable Manure," has put me in the position of the Georgia member: "Mr. Speaker, if I know my own sentiments, them's them!" Robbing Peter to pay Paul. Stick a pin there.

"The Season and the Crops." A superabundance of rain in the dog days, followed by drouth, has smashed the cotton prospect hereabouts, while fodder pulling has unmasked a good many small ears of corn and a goodly number of stalks without ears.

"Evergreen Grass again." It certainly was not my intention to "misinterpret" "More Anon." I had no doubt about his motives. My object was to bring out the true name of the grass, because I knew how ready people were always to jump at a new thing.

I am sorry to say that I have not been so fortunate in my grass hunt as "More Anon." I have no idea, however, that my opinion is worth anything against his on the subject of grasses.

"Does Subsoiling Pay?" depends on circumstances. I believe in deep ploughing and turning up the subsoil to be ameliorated by air, rain and frost. Still that may not suit all localities. Mine is a tenacious clay subsoil—surface soil very deficient in sand. Subsoiling don't pay here. The tribute to Dr. Hume is well deserved. G.

September 1st, 1870.

Texas Istle in England.

The object of this communication is to stimulate as much as possible the growth and collection of this valuable fibre, and to promulgate amongst the producers in Texas the exact state of our European market, as demonstrated in Liverpool. Unlike the past, the present and future are replete with encouragement.

Hitherto, our largest supply of Istle, Isle, Pita de Tampico, or Mexican Fibre, (as it is variously designated,) has been drawn from Mexico, and within the last fortnight 1000 bales thence, about two hundred tons gross, have been sold here. The only Texas Istle that we have received so far, has come *via* New York, and, though most of it has been quite equal to the Mexican in quality, some of it, it is to be regretted, has been "cooked" in New York;

that is, the superior long fibre has been extracted and the inferior reshipped here as the genuine article.

In Europe, we use this product enormously for brush and broom making chiefly, for which purpose it is a large auxiliary or substitute for piassava. We can take thousands of tons of it. The supply of both, however, is at present quite inadequate, and piassava has advanced thirty to fifty, and istle ten to twenty per cent.

The value to-day of ordinary to fine Texas Istle is £41 to £42 10s., equal to $197 to $204 gold per ton of 2240 pounds, at which the Mexican sold. There is no duty, and it sells readily, ex quay, as it arrives.

It is hoped that the agriculturists of Texas will see to this Istle, and also to its direct shipment to Europe. The Mexicans are getting rich upon it, and, as the river Rio Grande del Norte alone divides the United States and Mexican territories, it is difficult to imagine that there can be any geographical or physical reasons to prevent the Americans going ahead in its increased production with characteristic enterprise.

The last Texas shipment that we are advised of was one of one hundred and four bales, exported by the "Clara Woodhouse," from Brazos, Texas, to New York, which lot is expected here. Interested parties can have samples of the exact thing required, and further information at any time, by writing the undersigned.

ALEX. S. MACRAE,

Anglo-American Produce Broker, Liverpool, England.

Fallowing for Worn-out Lands.

There are two kinds of fallow—naked and covered. As a general rule, covered fallows are preferable to naked fallows, as the latter tend to waste the nutritive elements in the soil required for vegetation. In the covered fallows, that is, those sown with clover, the quantity of humus and carbonic acid is increased by the clover preventing evaporation of the nutritive elements from the soil. Naked fallowing is only to be resorted to when there is no other way of loosening the soil. In an acre of clover during its growth, over 114,860 gallons of water are evaporated; but this does not exhaust the soil, as 200 grains of water must pass through the vegetation to retain one grain of soil matter; when the clover is turned under, it returns this solid matter, besides having left the soil in a prepared condition to grow a crop. Covered fallows are preferable to manures, for manures do not act immediately on vegetation by means of their organic constituents, but by reason of their warmth and of the inorganic substances which they involve.

M. Baudrimont states that there is a natural process at work, by which liquid currents rise to the surface from a certain depth in the ground, and thus bring up materials that either help to maintain its fertility or to modify its character. This theory will account for the improvements which take place in fallows; and there is reason to believe that this natural process, as he terms it, materially influences the rotation of crops. Then we are led to conclude that the vegetable nutrition is mainly derived from water and the air, which are the conveyers of oxygen, nitrogen, carbon, and hydrogen, the four elements of plants.

In connection with this subject, it may be remarked that the true way to renovate the worn-out lands of the South is by covered fallowing them. By sowing them to clover, the soil will be made rich, or the nutrition for vegetation will be imbibed and held in solution, to be taken up by the following crops. The Southern lands do not need manure nearly as much as they need fallowing. The annual destruction of organic matter on the face of the earth is one hundred and forty-five billions of pounds, equal to two and a quarter billions of cubic feet. If all vegetation depends on organic matter for nutrition, to satisfy this consumption, 5,000 years ago, there must have been ten feet deep of pure organic substance on the surface of the earth. But it has been shown how vegetable nutrition is supplied, and it follows that covered fallows is the best way to make land productive.

There are other ways of rendering soils productive than by manuring, for the nutrition of plants is not derived directly from manure. Every farm has at least three times as much taken off from it as is given back again. The amount of its yield is three times greater than that of the organic matter it receives. By a judicious working of soils, no land should be worn-out. By a just regard of the principles of vegetable nutrition, the productiveness of the lands will be increased.

Clover and its Effects.

In October, 1869, I reported in The Rural Carolinian, (page 13,) the result of an experiment in cowpening, and sowing in barley and clover one acre and a half of miserably poor, worn-out red, clay land. The yield of barley was abundant; and the first mowing of clover, the second spring after sowing, was most luxuriant.

In November, 1869, I report on page 95, of same monthly, that the second crop was destroyed by the long dry summer. During the past winter the crop looked well, and in April last I anticipated a handsome yield from the first mowing, but as no rain fell upon it from 19th April until the 28th May, the clover did not grow high enough to mow, and was, consequently, pastured by a mare and colt, and a few pet animals.

In June fine seasons prevailed, and continued until the 4th July. By the 15th July the clover was a foot high and in bloom. No rain from the 4th July until the middle of August, consequently the seed did not mature, the stems died and shed their leaves, and by the 1st September the ground was covered with "rag" weeds from four inches to a foot high.

Adjoining this lot is a flat of fair old land, upon which I reported in The Rural of August, (page 661,) having grown this year forty-six bushels of good wheat, measured too after sunning. On these three acres the "rag" weeds stood on the 1st September from one to three feet high, and covered the ground much more densely than those in the clover lot.

These two lots were in August thrown into one, and on the 2d September broken up, or turned over from two to six inches deep with Brinly ploughs, each drawn by two stout mules. The clover lot being the most mellow was sometimes turned completely over eight inches.

When the ploughing was finished I walked over the lot with a friend, who instantly observing a sudden change in the appearance and color of the soil as we crossed the line of the clover patch, remarked "how much more friable and mellow this soil is than that." The difference is most perceptible. Where the clover grew, the earth, though red, is a deep, rich mahogany red; the remainder, before the flat is reached, is the genuine red clay. The clods of one are hard and dry, though it rained but a few days ago; the clods of the other are mellow and moist, easily broken, and perfectly ramified by small white roots. All these effects must result from the clover crops, and if so I am richly repaid for the experiment.

It is my purpose to sow these four and a half acres in wheat in October, and again seed it in clover in November. If the spring of 1871 is favorable, I anticipate one hundred bushels of wheat from the lot.

September 4th, 1870. D. W. A.

Productions of San Domingo.

Mr. F. Schumacker, in transmitting a package of textile and other plants of St. Domingo, to the Department of Agriculture, writes as follows:

I had the pleasure, by the mail a month since, of advising you of my intention to forward by this steamer the lace bark tree. It is at Neyba, west coast of the Bay of Ocoa. President Baez sent for it, but it is so little known no one could be found to select it. The President's brother, the governor of Azua, is now here, but will return in a few days, and will obtain a specimen; also, the "Palo del Cruz." Mr. Baez himself knows the lace bark well, and has frequently seen it at Neyba. I hope to furnish it by the steamship Tybee, of July. Mr. Baez has kindly furnished me, for your Department, the "guarantey," a textile, in which I feel a great interest. You have some of these plants in the package; also, specimens of the *bark*, to which I call your special attention. The plant is abundant, (propagated by layers or cuttings,) of great strength, and, I imagine, is well adapted to linen fabrics. The leaf is so tenacious it can scarcely be ruptured, and would pulp admirably for paper stock. The plants I send have been out of the ground now two weeks, and have lost the leaves, which I regret. They were sent to the President from the Bay of Ocoa. This island could furnish the world with textiles.

I have sent an agent to the States to get a machine to strip the cabaya and prepare it for market, if such can be found. The maji and other plants also furnish textile material, but the cabaya and the guarantey are at the head of the list. In dye and cabinet woods no country is richer.

You have no conception of the resources of this favored land. Under Spanish rule it has exported one hundred millions annually. Under American enterprise this might be increased ten-fold. Coffee, cocoa, tobacco, cotton, sugar, fruit, dye and cabinet woods, annatto, tumeric and indigo, (of which it supplied Europe at one period with more than half its consumption,) are here in the greatest abundance, and without season. Four crops of corn are produced annually. Almost every vegetable has a marketable value as a medicinal plant, or otherwise. Nearly every stream flows over sands of gold, and every hillock contains metallic wealth and magnetic iron. Cinnabar, copper,

gold, silver, and nickel abound. Salt exists in mountains, in semi-transparent crystals.

We have not a plough, steam-engine, or wagon-road on the island, or a saw-mill, and yet, such are the natural resources, over $800,000 was paid last year for transportation alone, from Santiago to Puerta Plata, about fifty miles.

The following is a list of the plants received:

Aguacata, 3.—Vegetable fruit; a delicate salad vegetable; called here avocata, or alligator pear.

Mamey, 1.—Fruit.

Maji, 7.—The indispensable hedge plant of the island; very large and impenetrable; a textile.

Indigo, 7.—Common in all open lands.

Arneira, 1.—Flower; bright pink, in large clusters.

Guarantey.—Textile.

Mariposa.—Parasite on the sour orange, or lime.

Franbottan, 6.—A gorgeous scarlet flower tree.

Venezuela Cotton Tested.

"Venezuela Cotton (seed for sale by Dr. Leitner) makes a full crop early in August; therefore no danger from caterpillar. Grows to an immense size, and yields prodigiously," etc., etc., *ad libitum*.

Is it any wonder I thought my fortune made? To be sure I thought so before when I invested in ramie roots at a fabulous price. And I thought I would soon be rich in stock when I bought up all the Japanese clover seed I could find, for pasture. In both these instances I was destined to be disappointed. My ramie is *growing* to be sure, but so are my years, and in about the same proportion. My stock have waited long and patiently for the *fine early spring pasture* that the clover was to furnish; but as September is now upon us, I begin to be less hopeful of their "getting fat on it before the inferior grasses come up." And as it has not yet sprouted, I am afraid it has all gone to root in search of its natural country.

But this cotton, that is evidently *the* thing, so I thought, poor deluded wretch! If any of your other readers thought so it is to be hoped that they took it out in thinking; but I did not, oh, no! "Make hay while the sun shines," etc. I went into *the* thing; bought some seed—might as well own up—paid $10.00 a *peck* for it; and now the vile stuff is *behind* all my other cotton! Talk about "progress," "old fogy ideas," etc. Mr. Editor, I am a young man, but I want to ask you, if you had had one hand burnt off would you put the other in the fire? *But*, if anybody *else* would like to give it a trial, I can furnish seed. I will not be selfish, but will "help the struggling planter;" and though they should want *all*, I will sell it freely. I will not try to make anything on it either, but will "let it go at cost"—mere nominal price, $40.00 a bushel—when you consider its immense value, according to Dr. Leitner, and he ought to know.

Beaufort County, S. C., August 29th. P. R. FLUNKS.

Potato-Vine Hay.

In our ordinary plantation system, the supply of long forage for stock is generally made a secondary consideration, and, consequently, is never abundant. In the middle and lower counties of the State, where the sweet potato is largely planted, an addition of considerable value may be made to the fodder loft with but little trouble.

I have long been in the habit of going into my potatoes before frost—say about 10th of October—pulling by hand the vines, and immediately putting them into compact cocks about twice the size of a flour barrel. They remain thus four or five days, when the cocks are thrown down for three or four hours' sun, and then hauled in and housed. It makes an excellent hay. Horses eat it with avidity.

The greater facility with which the potatoes are dug, after the beds are cleansed of the vines, repays the expense of making the hay.

Barnwell, S. C. H.

The Agricultural Schools of France.

The French schools of agriculture are placed under the authority of the Minister of Commerce and Agriculture. They receive boarders, externs and free pupils. The candidates for admission must be eighteen years of age, Frenchmen by birth, or naturalized; and if they do not hold the diploma of Bachelor of Science, they must undergo an examination. The studies, practical and theoretical, extend over two years, and comprise a course of chemistry, engineering, sylviculture, viticulture, horticulture, and agricultural book-keeping. The practical includes the use of all tools, implements and machinery; the planning and execution of all farm operations; practice in linear drawing and surveying; manipulations in the laboratory, analysis of soils and manures. The terms for boarders are 750 francs a year; for externs and for free pupils, 250 francs. These last undergo no examination, and are admitted only by a special permission of the Minister. Foreigners are also permitted by permission of the Minister. All the pupils who pass satisfactory examinations, at the close of their studies receive a diploma, and to the first two on the list, gold or silver medals are awarded.

American Sumac.

A late dispatch from Liverpool states that the importations of sumac from Sicily in one day amounted to 6,417 bags, and that in the same time 1,200 bags were shipped to the United States. These are daily occurrences, and invite attention. If it is not singular that American sumac is not exported to Great Britain, it is really surprising that such large quantities should be imported into the United States. The value of this article, as is well known,

is in the proportion of tannin it contains, and its freedom from sand, grit, or vegetable fibre. Liverpool authorities state that numerous well-certified tests, of both Sicilian and American sumac, prove beyond question that the American is superior, to the extent of ten to twenty per cent., to the Sicilian. The varieties compare as follows: Finest Sicilian: tannin 23.65; sand 1.00; vegetable fibre 75.35—100. Finest American, Virginian: tannin 30.00; sand .50; vegetable fibre 69.50—100. Adding the fractional differences in these disparities, the result shows 20.70 per cent. in favor of the Virginia product. This superiority is not confined to Virginia, however; an analysis of Tennessee sumac showing of tannin 26.00; sand 1.50; vegetable fibre 72.50—100.

Department of Horticulture and Rural Art.

Dr. Wylie's Hybrid Grapes.

Since the publication in THE RURAL CAROLINIAN for September of Mr. Ravenel's letter, and our appended remarks on some of Dr. Wylie's grapes, we have received from him specimens of many others; and, much as we were pleased with those sent us by Mr. Ravenel, we were not fully prepared for the pleasure reserved for us. We confess to being astonished, as well as delighted, in view of the results attained; and cannot find words to adequately express our appreciation of the value of Dr. Wylie's labors.

To describe properly all of Dr. Wylie's hybrids that we have had the pleasure of tasting, nearly twenty-five in number, would require more time and space than we have now at command; besides, we are not qualified to do it. In tasting and comparing so many varieties, we found ourselves losing the power of nice discrimination, and therefore confined ourselves, in our critical examination, to a few. Of these, and others which may be equally good, we hope in future numbers to present full accounts, from the pen of Dr. Wylie himself, with illustrations from nature of some of them.

Of *Janie Wylie*, (Clinton Hybrid, No. 1,) we have already spoken. The specimens since received more than confirm our high opinion of it, and we agree with Mr. Ravenel in placing it at the head of the list, and take pleasure in endorsing the name he has given it. In point of flavor, merely, it is not the best, though excellent; but, considering its size, beauty, productiveness and freedom from disease, it is unequalled by any grape with which we are acquainted. Our frontispiece, drawn and painted from nature by Miss Amie Wylie, and engraved by our own artist, Mr. Redding, shows the berry and bunch of natural size, and in no way exaggerated. We print elsewhere Dr. Wylie's own account of this remarkable grape.

We are not prepared to say which should come next in order, considered as a grape for general cultivation, but will name Halifax Hybrid, No. 55, (F.

Halifax, M. Delaware.) This is truly a magnificent grape. Bunches, medium, long, shouldered; berries, medium or large; color, dark purple, approaching to black, with a purple bloom; skin, firm; flesh, tender, juicy, sweet, sprightly; quality, best. Some gentlemen, who tasted it, pronounced it the best grape in the collection.

Halifax Hybrid, No. 38, (F. Halifax, M. Delaware,) is another grape of great beauty and promise. It is of a dark red color, with a purple bloom; but, having mislaid the notes we made on it, we cannot describe it in detail. It is one of the most promising of all for general cultivation, being perfectly hardy, free from disease, and apparently suited to all kinds of soil where any grape will grow. Its foliage is that of the *Labrusca* type.

Halifax Hybrid, No. 30, (F. Halifax, M. Delaware,) a black grape of a fine delicate flavor; and Halifax Hybrid, No. 49, (F. Halifax, M. Delaware,) also a black berry of high vinous flavor, are both grapes of great promise, of which we shall publish detailed descriptions in future numbers.

Of Peter Wylie Hybrid, No. 1, (F. Halifax Hybrid, No. 1, M. Delaware Hybrid, No. 8,) we hardly dare to say anything, for fear of seeming extravagant, and being set down as an enthusiast. Imagine a beautiful greenish amber grape, of medium size, with the thick leathery foliage of the native, and with almost the exact flavor of the White Frontignan, and you have an imperfect idea of it. We fully believe it to be *the best flavored grape ever originated in America*, and equal to the best foreign kinds. The vine is a strong grower, with short-jointed wood, and has never mildewed. We shall publish an illustrated description of this grape in a future number.

We have no disposition to give Dr. Wylie's hybrids a position above what their merits may entitle them to. They have yet to be further tested in regard to their adaptation to various soils and climates, but we are willing to risk our reputation upon the assertion that in *quality*, as grown here in South Carolina, some of them are decidedly superior to any native or hybrid grapes yet disseminated in this country.

On Apples Spotting.—No. II.

Formerly, when the lands in the South were new, and an abundance of vegetable and mineral matter was available as plant food, apple trees were planted at forty feet apart, in every direction.

As an apple tree at six years old will only feed on about twenty feet, it was many years before the roots extended sufficiently to exhaust the food already in an available state.

After some years, the trees were planted at thirty, and now usually at twenty feet.

We, on our thin sandy soils, have followed the directions laid down in the horticultural works, published for the guidance of Northern growers, operating on lands worth from one to three hundred dollars per acre, and where they

regard it their interest to plant close, and with heavy manuring and high culture, to compensate for the crowding of their trees.

They have largely failed, just as we have, under very dissimilar circumstances as to soil and climate.

We know that an apple tree, with its first full crop, will feed on all the ground we now give it; the most of the available food is exhausted in bringing this crop to maturity, and as the tree has no power of locomotion like an animal, to roam for its necessary food, it remains in its location, (poor in food,) and its vigor being checked, can thereafter only bring part of its crops to perfection.

When an entire apple tree and its fruit are burned, we find the ashes contain nearly fifty per cent. of lime, besides a considerable portion of potash, and some other minerals in less proportion.

As most of the South has a sandy soil, with a clay subsoil, never very heavily charged with the minerals necessary to the growth of the apple, the following remarks, will more particularly be directed to discussing the peculiar features of such a soil.

When we plant out an orchard for winter apples, such as Shockley, Nickajack, and those other fine winter keepers, from the Cherokee seedlings, found in Georgia, we find that they grow with vigor, the leaves are large, and of a rich deep green color, and retain their vigor till frost.

Even in bringing the first full crop to perfection, they retain sufficient vigor to perform fully the functions of elaborating the sap needed in maturing the fruit.

This, on our thin sandy soil, requires a great effort; but there is enough available food to effect it.

The tree will usually then have to recuperate through one year, and during that time mature fruit-buds for the succeeding crop, not having enough vigor the former year to mature its fruit, and also the fruit-spurs at the same time.

This is positive proof that the soil is deficient in food to produce annual crops, and thus they fall into the habit of bearing once in two years.

Even then, the roots have fed on all the available food, and the next crop will be found to spot more or less, the leaves becoming spotted and parched on their edges, sometime before the season of the maturity of the fruit.

Upon examination, it will be found, that the downy substance on the under side of the leaf, is prematurely dried, showing the little pores (*Stomata*) are unable to perfectly perform their functions in elaborating the sap, and much of the fruit spots and falls before frost.

With every succeeding crop, the leaves become smaller, change color sooner, the downy substance on their under surface dries earlier, and the orchard becomes worthless.

When we take into consideration the office performed by the lime, it becomes more apparent why we fail. We find it in the wood, bark, the network of the leaves, the core, seeds, and the outer skin of the fruit.

In the animal it forms more than half of the bones that sustain the framework of the system; it also sustains the structure of the tree, leaves and fruit.

The great law of nature is, for each fruit to reproduce its species. It follows, that the seeds are enabled to draw the lime needed for their perfection; but the thin skin of this fruit during this exhausting effort, having to continually expand as the fruit grows, fails to get its share, and the first indication is a slight rupture, letting in the air with its corroding oxygen, causing a small pimple, at first only perceptible when magnified, but afterwards spreading into a larger spot.

Aberdeen, Miss., August 31st, 1870. W. B. WILKES.

The Loquat (Eriobotrya Japonica.)

So much interest has been excited by the accounts of the so-called Japan Plum, published in the agricultural journals, that we have taken considerable pains to ascertain the true character of the plant in order to extricate the subject from the confusion that has arisen concerning it.

The name Japan Plum, as applied to the fruit in question, is a misnomer and should be dropped at once. There are several varieties of the true plum from Japan in cultivation by a few persons in Louisiana and elsewhere, but the plant generally known as Japan Plum is not a plum (*Prunus*) at all, but is more nearly related to the apple, the fruit being what botanists call a *pome* and not a stone-fruit. It is the *Loquat* botanically classed as a *Mespilus* (*M. japonica,*) by Linneus, but re-named more appropriately by Lindley *Eriobotrya japonica.* We will call it the *Loquat*—not a bad name nor a hard one—and no longer mix it up with the plums.

It is a large tree with thick nobbed branches and bright evergreen leaves, much like those of our sweet bay. The flowers come in autumn in spikes at the end of the branches, and the fruit, a five-celled pome of a yellow color when ripe, matures during the spring and early part of the summer. It is

about the size of a Guinea hen's egg, and somewhat resembles an apple in flavor. It was introduced from Japan, and succeeds finely in Florida and the extreme southern parts of Texas, Louisiana, Mississippi, Alabama, Georgia, and South Carolina. It probably cannot be fruited north of Charleston, though the tree flourishes, Mr. Ravenel assures us, at Aiken, S. C.

It may be grown from seeds, cuttings or layers. Nurserymen should supply themselves with plants, so that the demand that will certainly occur may be properly met. It is in every way worthy of cultivation, wherever the climate will permit, both as an ornamental tree and for its fruit.

Apples for the South.

We are often asked for a list of the best apples for the South. "The South" embraces a somewhat extensive territory, extending from the Potomac to the Rio Grande, and presenting almost every variety of climate and soil known to the temperate zone, with some touches of tropical fervor in Florida, and no list of apples, or any other fruit that we or any one can give, will serve any good purpose for the whole region. The proper course to be pursued, is to find out from local fruit-growers what kinds experience has shown to do well, and be desirable in the inquirer's particular neighborhood or region of country. If there be no fruit-growers and no such experience, let those kinds be tried that are known to succeed in a similar climate elsewhere. Where there is no other school, one must get his lessons, expensive though they may be, in that of experience.

We have described and illustrated some excellent Southern fruits, that succeed well throughout a large extent of country. We shall continue these sketches from time to time, bringing before the public new and promising sorts as they may be originated, but we beg our readers not to consider us as endorsing them all for universal cultivation.

Throughout an extensive region of country, embracing a large portion of South Carolina, North Carolina and Georgia, the following apples will very generally succeed. They are all excellent varieties, and some of them are almost universal favorites:

Summer Varieties.
Red Astrachan.
Horse.
Carolina Red June.
Julien.
Early Red Margaret.
Sweet Bough.

Autumn Varieties.
Batchelor.
Buncombe.
Buff.
Carolina Greening.
Aromatic Carolina.
Yop's Favorite.

Winter Varieties.
Mangum.
Maverick Sweet.
Cook's Red Winter.
Nickajack.
Shockley.
Pryor's Red.
Susannah.

For summer apples, varieties of Northern, Western or European origin, often succeed as well as native seedlings, Red Astrachan being an instance; but for fall and winter apples, none but those of Southern origin should be selected. Winter apples, in Southern climates, must have a somewhat moist, clayey soil, or a sandy loam with a clay subsoil. Those grown on a dry, sandy soil, seldom, if ever, keep well.

Wilson's Early Blackberry.

Our wild native blackberries are so abundant and excellent, that in the country generally, there is little inducement to plant the so-called improved varieties. We have eaten many a quart of blackberries, growing uncared for in the old fields of South Carolina and Georgia, equal in size to the Lawton, and of as fine a flavor as the Kittatinny. But here in Charleston, and

we suppose the same is true of other Southern cities and towns, few if any blackberries that are fit to eat can be found in the markets. They are picked by the negroes, brought into town in large baskets, (not very carefully handled,) and hawked about the streets until sold, reaching the consumer mashed, dirty and flavorless. The only way for city folks to have good blackberries is to grow them in their gardens. We have tried the Lawton here with very unsatisfactory results. The Harden, which originated in Georgia, we believe, succeeds well in the middle country and might do the same here. Wilson's Early is a magnificent berry, very early and very productive, and is worthy of a trial by those who are disposed to depend upon their own grounds for their fruit. Our cut is a correct representation of a cluster of the fruit taken from a two year old plant.

The Hyacinth.

Among hardy bulbs the Hyacinth stands (and deservedly so) as foremost; it is not only a general favorite for the garden, but has become exceedingly popular as a winter flower, from the facility with which it may be forced into bloom, either in pots or glasses filled with water; nothing can be more delightful, either for beauty or fragrance, than a stand of these lovely flowers, in the parlor or drawing-room, during the winter months.

METHOD OF BLOOMING HYACINTHS IN GLASSES.

For this purpose Single Hyacinths, and such as are designated earliest among the Double, are to be preferred. Single Hyacinths are generally held in less estimation than Double ones; their colors, however, are more vivid, and their bells, though smaller, are more numerous; some of the sorts are exquisitely beautiful; they are preferable for flowering in winter to most of the Double ones, as they bloom two or three weeks earlier and are very sweet scented.

Hyacinths intended for glasses should be placed in them during October and November, the glasses being previously filled with pure water, so that the bottom of the bulb may just touch the water; then place them for the first three or four weeks in a dark closet, box or cellar, to promote the shooting of the fibres, which should fill the glasses before exposing them to the sun, after which expose them to the light and sun gradually. If kept too light and warm at first, and before there is sufficient fibre, they will rarely flower well. They will bloom without any sun, but the colors of the flowers will be inferior. To ensure vigorous growth a favorable exposure to light and occasional fresh air, when mild, are essential. The water should be changed as it

becomes impure; draw the roots entirely out of the glasses, rinse off the fibres in clean water, and wash the inside of the glass well. Care should be taken that the water does not freeze, as it would not only burst the glass, but cause the fibres to decay. Whether the water is hard or soft, is not a matter of much consequence—soft is preferable—but must be perfectly clear to show the fibres to advantage.

Avoid a low water mark in the glasses by keeping it to a level with the base of each bulb. Never place the glasses upon a mantelpiece or shelf within the influence of fire heat during the process of growth. To stimulate and strengthen the growth, dissolve a pinch of sulphate of ammonia occasionally in the water after the bulbs are exposed to light.

Beurre Giffard Pear.

Beurre Giffard is an old, an excellent, but little known pear. It is an early variety, and one of the very best pears of its season. It should be picked just at the right time, which a little experience will determine, and ripened in the house. The tree is not a handsome grower, and requires careful pruning to bring it into proper shape.

The Janie Wylie Grape.

In 1860, I procured pollen, by mail, from Lyons Grapery, Columbia, S. C., of mixed foreign varieties, with which I fertilized a number of native varieties, and, among others, several blooms of Clinton. From the seed thus impregnated, I raised three Clinton and foreign hybrid plants in 1861, one of which was Clinton Hybrid, No. 1, since named by Mr. H. W. Ravenel JANIE WYLIE.

The formula of its parentage is—F. Clinton (*Cordifolia.*) M. Foreign (*Vitis Vinifera.*)

It was planted in most unfavorable soil—a tenacious yellow black-jack clay—which cracks widely in dry weather, and is sobbed with water in wet weather. In this soil it grew until 1864, when it showed its first fruit. In 1865, owing to the destruction of my fences by soldiers, it was broken down and almost destroyed by cattle; but still it survived, and has borne ever since. Until recently I had no other vine of this variety except one grafted on a strong Isabella stock. This flourished and bore for two years and then died. I have now two vigorous young vines in a better locality, which have borne this season for the first time, one of which bore the bunch represented in the painting sent you.

Owing to various circumstances, which I will not take space to detail, it has never been fairly tested anywhere. A few plants have been distributed, but sufficient time has not elapsed to get a report of their bearing. In the part of my lot where the old vine grows, about one-fourth of an acre of hybrid seedlings were planted at the same time with this hybrid, but owing to bad soil and drainage, the greater part are entirely dead, whilst this vine has survived with scarcely a sign of mildew or disease.

The vine is a pretty vigorous grower; wood, short jointed; foliage resembling the foreign, except that the leaves are thicker and heavier, and not inclined to mildew or scorch; bunch, very large, shouldered; berry, very large, some of the largest ones globular, (and an inch in diameter,) but mostly oblong; color, dark purple; flesh, crisp and solid.

The fruit hangs well on the vine. During the incessant rains this season about the time of ripening, where too much shaded, it inclined, for the first time, to rot. It has proved much more reliable with me than Herbemont, or Catawba, and has been pronounced by Parsons, Berckmans and Ravenel of excellent quality.

Upon the whole, we think it may prove quite an acquisition, particularly at the South. It will, probably, be too tender for the North without laying down and covering during the winter. I only raised two other Clinton Hybrids in 1861, the fruit of both of which has proved worthless.

But I have many new Clinton Hybrids just coming into bearing, which are of the most promising character. All my Clinton Hybrids set their fruit well. Bad setting of fruit renders many hybrids of the finest qualities in other respects worthless.

A. P. WYLIE, M. D.

Chester, S. C., September 8, 1870.

King of the Earlies Potato.

Messrs. Edward J. Evans & Co., of York, Pa., were kind enough to send us a package of this famous new potato at planting time last winter. The specimens were of medium size and handsome, and as the potato had been found so great an acquisition at the North, where the seed has been sold at fabulous prices, we prepared a row for them with great care, so as to give them every advantage which fine tilth and a generous supply of well digested compost could afford. We planted them at the same time and side by side with Early Rose, Early Goodrich, Harrison and Garnet Chili.

The vine of the King of the Earlies, is very small, so that it may be planted much closer than any other variety we have ever grown.

The season proved rather unfavorable here for early potatoes, and the King of the Earlies seemed to suffer more than the other kinds. The tubers were fit for the table nearly a week before those of the Early Rose, and were of most excellent quality but small, none of them reaching the size of the specimens planted, though some were left in the ground till the vines were entirely dead. The yield was smaller even than that of either the Early Rose or the Harrison, neither of which made a fair crop. We shall try it again, but our present impression is that it is not suited to our climate.

The Garnet Chili gave us the best crop and the finest looking potatoes, but the quality was inferior. It is a good market variety here, probably the best yet tried.

Amateur's Seed Bureau.

We lately saw at a friend's a piece of furniture, which it seemed to us is admirably adapted to the preservation of such seeds and bulbs as the amateur usually keeps. The reader will get a good idea of its appearance and construction from an examination of the accompanying figure. It is five feet high, three feet wide, and one foot deep, but may be made of any convenient size. The one we saw was made of mahogany; any other wood that suits the taste may be used. One made of pine, well oiled and rubbed bright with soft shavings, would not be out of place in the library or sitting-room.

The sides should be made of boards not less than an inch and a half thick, to make room for the bolt of the lock. The back may be made of thin stuff. The drawers may be five inches deep, or any other convenient depth. The two narrow strips or flaps on each side, one of which is shown open, serve the purpose of securing the drawers. On the flaps being closed

and locked, all the drawers are secured against being pulled out. In other words, by simply turning the key, half the drawers are locked. The position of the locks is shown, and the engraving exhibits the construction so clearly, that further detail is unnecessary.

This bureau, we think, is a French contrivance. It may be applied to a good many useful purposes, besides keeping seeds and bulbs, as well as be made an elegant piece of furniture, suitable for the parlor, the library, or the general sitting room. It would make, for instance, a very good fruit bureau, the drawers being made sufficiently deep to stand the fruit up. In a moderately warm room. Pears would ripen well in it.

F. W. WOODWARD, *in Horticulturist.*

Experience with Vegetables.

Agreeably to request, I have now to report upon other vegetables, and, first, of lettuces. I had upon trial the Perpignan, Boston Market, All-the-year-round and Hammersmith. When I received these seeds it was too late to sow them to be transplanted, and I did not have land enough prepared to give them room enough to allow them a fair chance, but used them mostly as "small salading." The Hammersmith was the first to run to seed; the other three started about the same time. The Perpignan and All-the-year-round seemed quite disposed to do all in their power to head, but the Boston Market seemed to be the general favorite in the family, and if I have to confine myself hereafter to one variety, I think that I will select this.

I send you a sample of the product of the new Radish, (*Raphanus caudatus.*) As you will perceive, it is not remarkable for its production of seeds nor its vigor. The seed was not received until rather late, (11th of April,) and the land was naturally rather poor, which may account for the small product. I tasted a few of the pods and they tasted exactly like the roots of other varieties, but I did not have enough to try them cooked.

The hot and dry spell of weather up to middle of June, killed off all my crops of early beets and carrots after they came up, as they were sowed rather too late for such a season.

C.

Horticultural Miscellany.

PEAS—SOME NEW VARIETIES.

During the past season we tried several of the lately introduced peas. Of the most dwarfish of the dwarfs, *McLean's Little Gem* is the best. It is perhaps no earlier than Tom Thumb, but much better in quality. It grows about a foot high, and produces well for so small a vine. *Caractacus* is early and excellent, rivalling, if not excelling, Dan. O'Rourk. *Eugenie*, we think,

is *the best of all peas* in quality, and excelled by few in productiveness. It grows three feet high.

SKIRRET OR CRUMMOCK.

The Skirret, (*Sium sisarum,*) once much grown and highly esteemed, but now abandoned in favor of inferior vegetables, belongs to the family of Umbellifers, and is a perennial plant, with bunches of fusiform, fleshy roots, from six to ten inches in length, and from three-fourths to one inch in diameter, somewhat crooked, of a russet color externally, the flesh being white. It is one of the richest alimentary roots; its flavor slightly resembles celery; it is good fried and for soups. Its produce is *enormous*, and it might, for many purposes, take the place of the Irish potato. It requires a light mellow soil, and is sown early in spring in drills one foot apart and about an inch deep, and the plants thinned out to six inches apart in the row.

A SINGULAR TROPICAL FRUIT.

The Durian, a fruit of Borneo, is described as growing on a large and lofty forest-tree, something resembling an elm in character, but with a more smooth and scaly bark. The fruit is round, or slightly oval, about the size of a small melon, of a green color, and covered with strong spines, the bases of which touch each other, and are consequently somewhat hexagonal, while the points are very strong and sharp. It is so completely armed, that, if the stalk is broken off, it is a difficult matter to lift one from the ground. The outer rind is so thick and tough, that, from whatever height it may fall, it is never broken. The five cells are silky-white within, and are filled with a mass of firm, cream-colored pulp, containing about three seeds each. This pulp is the eatable part, and its consistence and flavor are indescribable. A rich custard, highly flavored with almonds, gives the best general idea of it, but there are occasional wafts of flavor that call to mind cream-cheese, onion-sauce, sherry-wine, and other incongruous dishes. Then there is a rich glutinous smoothness in the pulp which nothing else possesses, but which adds to its delicacy. It is neither acid, nor sweet, nor juicy; yet it wants neither of these qualities, for it is in itself perfect.

FRUITS OF JAPAN.

Mr. Thomas Hogg, writing from Japan, several years ago to *The Horticulturist*, mentions apricots as very abundant and cheap, but not of good quality. The Loquat (*Mespilus Japonica* or *Eriobotrya Japonica,*) about which so much has been said of late under the name of Japan Plum, is the favorite fruit of the Japanese, and large quantities are brought into market daily during its season. When ripe, this fruit is very juicy, and has a pleasant sub-acid flavor, like that of a fine ripe harvest apple; but Mr. Hogg thinks the Japan Persimmon (*Diospyrus kaki,*) the best fruit of the country.

PLANTS MUST HAVE LIGHT.

The cultivator of flowers in rooms should understand the necessity of sunlight to plants that are to flower, and endeavor to get these as close as possi-

ble to a window having an eastern or southern aspect. The higher the temperature, the more plants suffer for want of light. Many plants might remain in a temperature of forty degrees, in a cellar for example, away from direct light, for months without material injury, while if the cellar contained a furnace keeping a temperature of seventy degrees, they would all die; such would particularly be the case with plants of a half-hardy nature, such as monthly roses, carnations, fuchsias, etc.

Dairy and Stock Department.

Is the South a Stock Country?

The South has ever been peculiarly an agricultural country, and a large portion of our agriculturists have heretofore lost sight of every industrial development but that of growing cotton. Whether this policy will be adhered to in the future no one can tell. Doubtless there are Southern localities where growing cotton will remunerate the planter better than other pursuits, even though the price fall to ten cents per pound; but there are other sections where at present little or no attention whatever is paid to stock, in which stock-raising would be very profitable. Theoretically, no country is better adapted to this department of agriculture than the cotton belt, but practically the reverse is the truth. In the uncultivated cane-brakes of the South, or the pampas of Texas, cattle grow and fatten without cost to the owner; but in the latitude of the upper half of South Carolina, extending westward, I think it questionable whether raising hogs, sheep, cattle or mules for market is, or ever will be comparatively profitable, while 4,000,000 bales of Southern cotton are necessary to supply the demands of the markets of the world.

The economy of mild winters and long summers over hard winters and short summers, as an argument in favor of Southern stock-raising, is answered by the laws of nature. In the vegetable kingdom all plants have a tendency by nature to increase in size coming from a cold to a warmer climate. Not so in the animal world. All domesticated animals degenerate in a warm climate. And this has, in a great measure, been the cause of signal failures with those who have attempted to raise stock in the region alluded to above. Immense Cotswolds, huge Chesters and mammoth Durhams are not the stock for the South. The small compact Merino and the perfectly-shaped Essex cannot be surpassed as Southern sheep or Southern hogs; but what cattle are best adapted to the South is a question more difficult to answer.

CATTLE FOR THE SOUTH.

The Durham, or short-horned, (or English, as many people call them, as though every big cow or sheep had, of necessity, foreign blood in its veins,)

are not the cattle for the South. As milkers, they cannot be surpassed for *quantity*, and no breed makes finer beef; but my experience is, the food required to fatten a Durham beef in Pennsylvania, or Kentucky, would barely keep him alive in the South. The influence of climate upon these animals, and upon their flesh, is very wonderful.

In the Northern States there are two classes of men who handle cattle; one class is known as the stock-raisers, and the other as stock-feeders. The first breed and grow the cattle; the second fatten and sell to the butchers. So expert have these "feeders" become in their calling, that they pay a higher price for cattle raised within a belt of latitude fifty miles north and south of Philadelphia, than they will for cattle grown in the extreme north or farther south. The beeves of Canada, inured to intense cold, become tougher and more difficult to fatten; while the Southern cattle, filled constantly with luxuriant and watery grasses, take on flesh less rapidly when being fed for the butcher, and are not as tender or delicately "marbled" as the Pennsylvania beef. Southern beef cattle are seldom fed from April till December, as the idea prevails that they will fatten on the natural grasses. The heavy Durham, when thus subjected to the necessity of subsisting himself from our natural pastures, and in all his rambling exposed to a burning Southern sun, will exhaust himself in his efforts to satisfy hunger. Consequently, in a few generations, the breed is lost, and relapses into an inferior, mongrel race, fit neither for beef nor milk. A Durham beef, with the frame that warrants his weighing 1,500 or 2,000 pounds when fat, in the condition our cattle usually are, in March and April, will require from three to four months to fatten; and, if fed advantageously, will eat half a bushel of corn and forty pounds of hay or fodder daily. It is not a difficult problem to count the cost of such beef with corn at one and a half to two dollars per bushel, and hay or fodder as much per hundred.

The Devons are smaller, more active, and more hardy than the Durhams, and hence better adapted to our wants. Their popularity, as a Southern breed of cattle, was, however, from neither of these causes, nor from their qualities either as rich and abundant milkers, but from their symmetry of form, which rendered them more salable than valuable.

The Brahmas are highly prized in many sections, but as their agility and nimbleness are more remarkable than their milking or beef qualities, they will not increase in popularity in these days of old rails and rotten fences.

The Ayreshires are much more valuable, both as milkers and beef cattle. In 1859, I imported from England a pair of Ayreshires, and have seldom known a heifer calf by that bull to be a thin milker. I have seen a cross from him and a Durham cow, with her first calf, give sixteen quarts of good, rich milk at a milking. This quantity is, however, more than a *daily* average from this breed; but that quantity of milk from an Ayreshire will generally produce double as much butter as the same quantity from a Durham.

The Jersey, or Alderney, is another breed of cattle rapidly growing in

favor in the South, and solely for their milking qualities. They are small, ill shaped, dun and white color, and by no means attractive, except over the milk piggin. They are seldom fat and plump, and are not unlike our native scrubs. It is said, however, the farmers of Jersey are so jealous of their worth that they absolutely refuse to allow the importation of other breeds.

The Brittany has the reputation of being the smallest, most compact, and perfect in form, and richest milkers of the cattle tribe; they are also industrious and hardy, and with all these qualities must be *the* cattle for the South.

SOUTHERN TREATMENT OF CATTLE.

Why surmise upon the adaptability of certain breeds of cattle to the South? No animal should be more highly prized than the cow, ox or fatted beef, and where, in all Christendom, are they more cruelly treated than in the Cotton States of America? If any breed of the bovine species could endure more patiently the treatment to which Southern cattle are subjected, and yet survive, than do our hardy natives, then, surely, such a breed would be the cattle for the South. Who that reads this article has not seen his neighbors cows (never his own!) standing with their four feet almost drawn to a pivot during a cold, bleak, wintery day or night, with nothing to ruminate upon but a few tasteless shucks, emptied in the mud, upon which they had trampled for a month? Such cruelty is unpardonable, and but from the fact that it is the almost universal treatment, would surely be prevented by force of law. The farmer who exposes his cattle to such hardships has never counted the costs of his conduct. Any cow giving a quart of milk when thus treated, would double the yield from the same feed, if comfortably housed; and the manure alone will repay for the additional trouble of housing. In midwinter there is nothing for them to eat "*in the pasture*," and the poor animal rambles to keep warm, or stands just beyond the pasture gate, patiently, but tremblingly, awaiting to be recalled to the scanty feed of shucks. What cruel novices in cattle raising we are, and what settled and confirmed habits of persecution must be reversed before we can make such a vocation profitable.

THE SOUTHERN SYSTEM.

Under existing laws, cattle raising at the South is an expensive and profitless business. Crops must be enclosed, and pasture lands are almost invariably unenclosed. Hence A, B and C drive their cattle to trespass upon D's pastures, and D must submit to the trespass, or enclose his lands, which would incur an expense equal to the value of the herd. Were all the open pasture lands of the South quite sufficient for all the cattle in the South, what encouragement would the present system present for improving or importing improved cattle? In the above case D would not benefit himself by importing a pure blood bull, for in the general pasture his fine cows would be crossed upon by old field scrubs, and thus degenerated; for a moment's reflection suggests that crossing improved cows to scrub bulls, is "breeding down," whereas crossing scrub cows to improved bulls is "breeding up."

THE REMEDY.

Southern Agricultural Societies might, with much profit and but little cost, improve Southern cattle by importing pure bulls. Their use could be *given* to all members of the Society, and thus encourage the growth of the societies. Those planters who held aloof would soon prefer to pay for a calf from an improved bull, rather than incur the expense of keeping a bull, or risking the accidental visit of a stray. Pure bulls are imported into the Northern States from England and the Continent at a cost of about $200 each. They are extravagantly lauded by flaming advertisements all over the country, and in less than a twelvemonth every calf by them is sold or engaged at about the cost of the sire. And no purchasers are more apt to be on hand than Southern aspirants to own a high-priced animal. How easily such extravagance could be avoided! The progeny of Northern imported animals are as difficult to climatize when brought South from Boston, New York, Philadelphia, as would have been the sires, if imported direct to Charleston, Savannah, or Mobile. Experienced herdsmen know that the climatic difficulties are as great when importing from Kentucky as from England. I imported two Durhams from Ohio in 1859. Both died. My Ayreshires came at the same time, and though the cow had for months to be fed with a spoon and covered with blankets to keep up vital warmth, she still lives, and when suckling a young calf will fill the milk pail as easily as empty the slop bucket.

NATIVES.

The native scrub stock of the South is simply a cow with hoof and horns and nothing to recommend her either for milk or beef. Occasionally a prodigy is found as a milker, whose owner, ignorant of her genealogy, will contend that "all this talk about blood stock, yellow soft skins, this or that color and the like," is humbug; when, if the truth were known, she is the offspring of some improved bull that had spent a night from home. I have heard men boasting of their fine native milkers, when a single glance convinced me they were the calves of my old Ayreshire, for sometimes he would leave me for a night.

A GOOD MILCH COW

is as easily known from general appearance as from pulling the teats. A small, long head; thin effeminate neck; small dewlap; narrow shoulders; thin brisket; broad ribs; heavy loins; level back; high hip bones; wide hips; thin thighs; crooked legs; small tapering tail; soft, but not fleshy udder; small teats, and withal a pleasant expression about the eye; these are some few of the unfailing signs of a good milker. I have had very fine cows with large horns and without horns; with large legs and small legs, and of every color almost. The color of the skin is more important than the color of the hair. A yellow skin is preferable with objectionable colors, to a white skin with choice colors. A heifer that partakes of the masculine build is seldom, if ever, fit to keep as a milker. The short thick neck, the heavy brisket and shoulder, are just that much too much like the male

to add to the value of the female. Such animals very often fail to breed at all. A general rule may be suggested, that copious milkers do not fatten well, and easily fattened cows are seldom good milkers. Assured that small cows are the best for the South, we should avoid large bulls. The cross will be sluggish and thriftless; such offspring often destroys the mother at parturition.

GESTATION.

Southern planters know but little of the gestation of cattle. I have observed this feature of stock raising sufficiently to satisfy me that healthy cows will almost always extend this period to the same length of time exactly. Seldom is it more than 284 days, and as rarely less than 274, and oftener than otherwise just the mean of 279 days. A well grown heifer may become a mother before three years old; if so, she should not be allowed to breed again until over four, that she may attain her proper size. I have had a sucking calf to become a mother.

Colonel J. B. E. Sloan, of this State, has a heifer twenty-three months old that has been giving a generous supply (a gallon or more) of very rich milk daily since she was eleven months old; and she never was a mother.

Some cows are much more prolific than others. Cows kept to rear calves from should breed every fifteen months. I have had them to drop five calves in less than five years; and I have known others to invariably suckle their calves two years. A cow separated from her calf a few days after birth, and not allowed to roam with the bull, will milk for years. If our villagers, whose cows are generally befouling scavengers, and our citizens of humbler means, who often impoverish themselves by owning too many cattle, and especially the freedmen—every one of whom seems bent on owning a herd—would only remember this fact, and systematize the keep of their milkers, they would become much more profitable to their owners, and less trouble to their neighbors. Some herdsmen report, that spaying a cow soon after the dropping of a calf will continue her milking without interruption until old age. I know nothing of the truthfulness of such a report.

More on this subject in our next.

D. WYATT AIKEN.

How to Fit a Collar to a Horse.—In purchasing a collar for your horse, it is important to get one that fits him, as both the animal and yourself will thus be saved much annoyance. The *Harness and Carriage Journal* says:

"The plan adopted in the West, which we are assured by men who have been long in the collar business, does not injure the collar in the least, is to dip it in water until the leather is thoroughly wet, then put it on the horse, secure the hames firmly, keeping it there until it becomes dry. It is all the better if heavy loads are to be drawn, as that causes the collar to be more evenly fitted to the neck and shoulder. If possible, the collar should be kept on from four to five hours, when it will be perfectly dry and retain the same shape ever afterward; and as it is exactly fitted to the form of the neck, will never produce chafes or sores on the horse's neck."

Department of Natural History.

We have the pleasure of announcing that we have secured in this Department the services of Mr. CHARLES R. DODGE, Assistant Entomologist of the Department of Agriculture at Washington, who will devote especial attention to insects injurious to vegetation in the South, without neglecting, however, other branches of Natural History.

Directions for Sending Entomological Specimens.

The readers of this journal have it in their power to give practical direction, and a local and personal interest to these pages of natural history, which cannot be secured without their coöperation. They are to become helpers in the work of practical entomology in the South, by observing the peculiarities of the insect world about them, collecting specimens of those whose habits and mode of life are not familiar, and forwarding them for examination and description.

In sending insects for identification, or with inquiries concerning habits, etc., it is necessary to have whole specimens in order to name them with any degree of accuracy, unless, perhaps, they are very common species.

The most common mode of transportation is to enclose them loosely in an envelope with no other protection than the letter accompanying them; and the most common thing for an entomologist to do when in receipt of such specimens, is to say in his answer: "Too much broken to identify;" we therefore deem it necessary at the outset to give a few plain directions how to send.

Worms, caterpillars, etc., should be sent in tight boxes, with a quantity of the plant on which they were found feeding, to sustain them on their journey. Always send a number, as it is sometimes impossible to obtain the perfect insect from two or three specimens; and often many may die before reaching us. No air-holes are necessary.

Beetles, plant-bugs, wasps, and other hard-bodied insects that are liable to be crushed, should be enclosed in a box with a little cotton, or better in a phial of alcohol, (of course secured from breakage.) Very small specimens come safely in a common quill, closing the opening with a piece of cork or wad of paper.

Butterflies, moths, gauze-winged insects, etc., can be forwarded in any small paper box, though when several are sent together, it would be well to place each specimen by itself in an old envelope corner.

When insects are sent to be named, they should be numbered and a corresponding set of duplicates be retained by the collector, as we do not agree to return specimens.

The "Red Bug."

This noxious insect (*Pyrrhocoris suturalis*) may properly be classed with the insect enemies the cotton planter has to contend with. In some parts of the South where it is most abundant, it has been a source of great annoyance by its habit of staining or discoloring the unripe cotton in the boll, thereby lessening its market value, or rendering it wholly unfit for use where whiteness of fibre is concerned. Speaking of their numbers at one time in Florida, Mr. Glover says in an article on the subject: "Immense quantities were seen infesting the fields near Jacksonville, where the cotton plants were literally colored red with the multitudes, crawling over the stalks leaves and bolls."

About one hundred eggs are laid by the female, which hatch into plump little insects of a deep red color, marked with whitish bands, and provided with legs and a beak all ready for action. Though starting life without wings, they acquire them on coming to maturity, when the insect is about half an inch in length. Its color beneath is bright red, the wing covers are dusky brown and are marked with two whitish lines crossing each other in the centre. The head and front portion of the thorax are red, and the legs red and black. Its beak, which denotes it to belong to the order of true plant-bugs, (*Heteroptera*,) is four-jointed, and answers the double purpose of piercer and sucking tube.

They make their appearance about July or August, and commence their work at once, though the cotton nearest maturity is most injured by them. As they hybernate during the winter in old stumps or under rubbish, their numbers may be greatly lessened by furnishing them convenient places in which to hide away, and then burning them out.

Answers to Correspondents.

Specimens of insects, accompanying letters of inquiry, (securely packed,) may be sent by mail, postpaid, to Chas. R. Dodge, Department of Agriculture, Washington, D. C.

Eggs of Reduvius.—M. S. R., Edisto River. The hexagonal masses of brownish eggs which were found upon the trunks and branches of trees on your place, and which you took the *precaution* to destroy, are those of the *Reduvius novenarius*, an insect which, when full grown, measures over an inch in length, dark or grayish colored, and having a saw-like protuberance on the thorax. As their food is almost entirely injurious insects, they are highly beneficial, and in crushing their eggs you were destroying your best friends. They are provided with a powerful beak or proboscis, which they use to good advantage, thrusting it into the bodies of their luckless victims, and then feasting upon their juices. The eggs are deposited in the fall upon the branches of trees, and do not hatch until the following spring. The young insects are bright red, with the head and thorax black, and are wingless.

Orange Caterpillar.—B. F., Jacksonville, Fla. The brownish gray caterpillar, two or three inches in length, covered on the back with whitish spots or blotches, is the larva of *Papilio thoas*—Linn. This is one of the largest of the swallow-tail butterflies, (so

named from the tail-like appendage on the hinder wings,) measuring four or five inches from tip to tip. It is black above, with a transverse band or row of yellow spots extending across both wings, and another around the hinder pair. The underside is yellowish, marked with blue spots. It feeds upon orange and lemon, and is most common in the Southern States, although we have taken it as far north as Lake Erie. The eggs are never laid in a mass, but are scattered over the tree, one or two on a leaf.

Labor and Immigration.

Labor.

Our "school-books" told us of a "golden age," a period which, by its title, indicates the happiness of mankind. Our "experience" is—teaching us something of an "age," which, perhaps, if due deference were had for the character of humanity, ought to be written as the "dark unknown." But posterity has "rights;" and those "rights" must be neither invaded nor postponed. "History," in its high estate, is the philosophic arrangement of "events" sacredly and truthfully set forth; and, among those "events," "revolutions" make a large portion of the world's story. All "times" and all "nations" have encountered them, and all "traditions" have pointed to them as "causes" of "good" or "evil," as "results" have made manifest. The Southern States of America have passed through two of these "tempests;" the first, when they joined in the struggle for "independence," and sought, with their Northern brethren, that liberty, which *together* they so bravely achieved; the second, was when the children of the "fathers," believing that "God and the law" were on *their* side, struck for their own reading of the Constitution, and decided upon a new confederacy, better adapted to their own interests, and more conducive to their own opinions of self-government.

This last effort, unlike that which preceded it, has utterly failed; and *we* are paying the penalty which the conquered always *have* paid—though *our* "instalments," unquestionably, are in a more aggravated degree. So far as the writer knows, the transition from prosperity to adversity has never been *so* rapid or *more* bitter. In other instances, "Time," the great physician, has had something to do with the "case." With *us*, the paroxysm has been immediate, and has scarcely had an intermission; but the difference in usage has been cardinal in its nature and marked in its influence. In barbarous ages the "defeated" have been made the servants of the oppressor; but it has been reserved for the *South*, when subdued, first to be subjugated, and then to be degraded. For the honor of our race, be it said, "the character of *their* subordination has no parallel in the annals of war."*

It is for the South now to meet the "logic of events;" and, if she cannot at once repair misfortune, to endure, and thus to defy it.

*I consider this as merely prefatory.

All life is "labor"—and *our* share of labor must be given to the soil. Mankind want our "staples," and the "soil" can still provide them; for, if other prerogatives have been taken away, no enactments have yet changed the climate, and none have reached its natural productiveness. We have been despoiled of much, but the "land" and its fertility are still "ours."

We were once "proprietors," upon a large scale of agricultural magnificence, and of corresponding wealth! We must be content *now* with that measure of human happiness, which if less brilliant, has also much less of "responsibility" and of "care" to contend with, but which may well command a tranquil and a peaceful sojourn in the State that gave us birth. It is undoubtedly true that capital and labor constitute the power of a people, and it is equally true that South Carolina possesses *these*. The same fields are here, and the same arms are here, and the same minds are here, to direct the application of an established principle. It is only the "relations" between "persons" that have changed, and the writer contends that *this* change is not fatal, not synonymous with "ruin;" not to be followed by poverty; nay, not incompatible with a manly, brave, and honest "*stand-up*" against all the difficulties that surround us.

We cannot *all* have public office or public favor; indeed, it is doubtful, whether to deserve them is not the surest way to be denied them; but we can claim that we have hearts, and we are not suspected of being without "will." Our worst enemies make no charge that we are without intelligence enough to perceive the sufferings which our condition has engendered; and our own sensibilities admonish us, that if we want sympathy we must work for it; that verbal "sympathy," which is always upon the lips, means nothing. It is only when our shoulder is at the wheel that Hercules consents to listen to our "prayer."

What an acre may produce in cotton or in corn, what deep ploughing brings forth, what "drill husbandry" makes visible, what manure is cheapest or best, what advantages are derived from a rotation in crops, are all most valuable considerations; but those considerations are useless without "labor." "Labor" should be our watchword, and the labor is *here*. *Political* associations serve *particular* purposes, as the colored militia and the fall elections, etc.; but neither of these give us our "daily bread," and neither, therefore, are to be regarded as constituting the great object of existence. "Labor" does; and to "labor" let our energies be faithfully and fearlessly given.

The writer has seen something of the good and "evil" of this world—and the destiny of man, *here* and *hereafter*, has not always been absent from his thoughts. He is supposed to have loved his country—and he ventures a suggestion for the benefit of *those* who *now are*, and for *those* who "*will be*," when *his* pilgrimage is over. It is admitted that the land is fertile, and it is susceptible of being made more so. "Courage and labor" are what we need. Only let us substitute "industry" for "lamentations," and all will be well. Our seacoast furnishes *the* "material," which God seems to have developed for the exigency. The discovery of phosphates is more valuable than the

mines of California! These are great "principles;" our own "*resolution*" must "*apply*" them, or we degenerate and perish by that "*vis inertiæ*," for which there is no remedy save in resistance.

When "Cato" was asked, "What is the *first* principle in agriculture? he answered: "To feed!" the second, "to feed!" the third, "to plough!" That wise man was habitually right. But our case is peculiar; we are almost resettling a country; we must "plough" first, and the "feeding" will soon follow. We must take our place among the "people" of the earth, and *then* we must adopt Cato's rule, for we shall have learned "Cato's" wisdom.

Let us give no more time to unavailing complaint, or to "*unheard*" murmurs, or to "timid despondency." Let the landholder confer with his neighbors; let "parish meetings" be resorted to—as in former days they were called for social or convivial purposes. The changed condition of the colored man has to be acknowledged. If it offends him to call him a "negro," let him be called a "freedman." Let a proper system of labor be organized; let rigid "justice" prevail, a kind encouragement be extended, and confidence restored. We have *now* the best "peasantry" that we ever can have for our climate, and for our purposes; and the *new* and improved condition of the "*peasant*" brings us into a nearer and more intimate association with each other. Then, let us "put on our armor" and triumph. Success is not doubtful, if courage is not wanting. Everything impels us to the effort, and everything is within our reach, if the "belief" is in our hearts.

ALFRED HUGER.

Department of Science and Discovery.

Anæsthesia—What is it? And to whom are we Indebted for it?

In an anecdote, relating to the discovery of the Electric Telegraph, published in this journal not long since, allusion was made to a young physician, then just returning from his studies in Europe, by whom the experiments, which finally resulted in the greatest gift yet bestowed by genius on the *social* relations of man, were exhibited. It was the singular good fortune of this same gifted man, to present the world with another discovery of transcendant value to *suffering* humanity—to man in his hours of pain and anguish.

The name of Charles T. Jackson, can never be separated from *Anæsthesis*. Other claimants have sprung up, and still others will, doubtless, hereafter spring up, to usurp the coveted immortality which must forever cling to the name of him who was the instrument and messenger for heralding to groaning, agonized man, the wonderful, the inconceivable, the inestimable tidings,

that pain has been conquered and subjected to the will of man! Recently, on the announcement of the death of Professor Simpson, we have seen the telegraphic dispatches and the newspaper squibs attributing to him the great discovery. But the extent of his merit consists only in using another kind of ether; and that at the suggestion of Mr. Waldie, a chemist of Edinburgh.

What is Anæsthesis?

The taking away of pain. So much the Greek roots of this simple word import. But who shall tell all that is contained in those little words? The words themselves have no such power. On the ear of the well man they make hardly an impression. Taking away pain! What is pain to one who does not feel it? It is an abstraction—it is nothing. "He jests at scars who never felt a wound." Man looks on in wonder—often in unrestrained amusement, at the fearful throes and agonies of the pain-racked sufferer. The holy minister of God, while executing the inquisitorial atrocities of a Philip or a Mary, dreamed no more of the ineffable sting and venom of the rack, the torture and the flame he was subjecting his victim to, than did the thoughtless crowd of idlers who gazed at and commented on the sufferings which were of such widely different import to the victim and the judge. The little child, in his happy sports, inflicts on the delicate bird he toys with, unimagined anguish while he laughs in glee to see its vain struggles to escape from the awful agonies of pain. Even in brutes we see this antithesis of pain and pleasure, and the wretched mouse suffers, under the tantalizing sport of its captor, anguish and pain as keen, perhaps, as anything that racks the human mind or body.

"Pain," says Milton, "is perfect misery, the worst of evils, and, excessive, overturns all patience." None know it but those who feel it. It is the antagonism of pleasure. It is disease. It annihilates strength and "kills by exhaustion as hemorrhage does." Destroys moral responsibility. Ruins intellectual activity. Converts gentleness into petulance; makes power tyranny; strength weakness. It blurs the face of nature and makes this beautiful world a very hell on earth.

What then should we think of a power capable of controlling this frightful demon?

As of God's own and most precious gift; and the human agent of its bestowal should have our grateful homage as His messenger.

Has Ether this power?

Velpeau, undoubtedly the greatest of modern surgeons, said, before the Academy of Sciences of France, on the 4th of March, 1850, in a Lecture on Etherization:

"Never was a discovery submitted to so extensive tests; never was a subject worked up with such ardor. Experiments on animals; experiments on one's own person; experiments on healthy men and on the sick, physicians and surgeons; all the world puts itself to the work. The fact was easy to repeat at all times and all places; and it was not long before the observations in Paris alone, could be counted by thousands. Now, on all sides, in every part of the civilized globe—in Germany, in Russia, in Italy, in Spain, in Portugal, in Turkey and in Egypt itself, as well as in America, England and France; in the Provinces and in the smallest villages, as well as in the capitals; among private persons, as in the great hospitals, etherization has become an obligatory necessity in every operation, within about four years—the number of experiments must be incalculable. So rich a harvest, a mass of materials so large, ought to enable practitioners to examine the matter on all sides, and to separate all its elements and appreciate their importance. What singularities—what a varied picture is unrolled before the

eyes of an attentive observer! Sometimes the etherized patient is conscious of the operation going on upon him; he knows that he is the subject of it; he follows, as it were, all its phases. A Russian nobleman was operated on for a cancerous eye. * * * 'I had not lost,' he said, 'the train of my ideas, I followed all the steps of the operation but felt no pain. I heard distinctly, the noise of your instrument which penetrated the parts, which it divided, and thus separated the diseased portions from those which were healthy.' Thus, minus the pain, and the faculty of moving, the intelligence remained and was able to analyze even the operation itself."

Prof. Miller, of the Royal Infirmary of Edinburgh, tells the following case; the patient was a "Navy:" "At first little effect was produced, but, after some minutes, the patient fell back in a swoon. The operation was about to proceed, but the man objected, saying he was not asleep, it would not do. At length the operation was performed, the flesh cut and the bone sawed." After it was over the professor said to the patient, "I suppose you won't let me operate to-day." "Certainly not," said the patient. "It would not do I must be asleep. The thing has not succeeded, and I am sure it can't with any one else, for I did everything I could to go to sleep, for my own sake; and I'd do anything to please you." "You won't even let me make a cut into the leg?" "No. I must be asleep. We can try it another time." A hearty round of applause from the students told the patient what had been done, who, looking at his leg, said, "No doubt there is blood, but I havn't felt a single thing done to my leg. That *bates* the globe." On being decidedly questioned, if he had felt anything, he repeatedly answered, "Not a hap'-orth."

A lady of this city, under a most profound, extensive and protracted operation, repeatedly said, in the most tranquil manner, "I see what you are doing, and hear what you say, but I feel no pain."

This is Anæsthesia, and it may, without any exaggeration, be said that milions have already experienced its blessings, while, in the vista of time, we may vainly strain the eye of the imagination, and yet fail to catch the most inadequate appreciation of what is yet to come.

After the Crimean war it was reported to the French Emperor that 30,000 operations had been performed under the influences of Anæsthesia. Add to these the Russian and the English! Think of Magenta and Solferino! And look, alas! at those battle-fields from which the reeking blood has hardly yet ceased to send its cry of murder to the high chancery of Heaven! Think of the palaces and the hovels, the hospitals, the dispensaries, the asylums, the cells of the maniacs! Think of the mother in her throes! of the infant in the horrific writhings of a convulsion that distorts its angel face to the likeness of the infernal devil! Count the sleepless host, from the king, on his downy pillow that brings no rest, to the captive on his granite couch, scarcely as hard as the fate that has befallen him! Ponder upon the Protean forms of pain and the uncountable numbers of its victims, and then try, with all the powers of calculation known to science, to estimate the value of that power that has already done so much in its infancy that imagination shrinks from speculating on what it may achieve in its coming strength.

Is this discovery new? If it is, to whom do we owe it?

The idea, certainly, is not new. Far back, in the dim traditions of antiquity, we find "mythical accounts of the virtues of stones steeped in wine and vinegar, of the mandrake and other plants." And later, when the stupifying powers of certain vegetable productions became better known—opium, hyosciamus, conium, belladonna, Indian hemp, etc.—all these were pressed into service for the same purpose.

Cold, carried to the freezing point, as observed by Baron Larry, after the battle of Eylau.

Alcohol, used to the extent of total drunkenness, as in Haller's case of childbirth, and Blandin's and Hayward's amputations on patients dead-drunk, and the advice of Richerand to employ it in the reduction of luxations.

But to all these the same objection is made—they affect the system unfavorably and interfere with the after treatment of the patient.

Mesmerism has had its day. See cases reported by Cloquet, Dugas and others.

Nitrous Oxide or Exhilarating Gas has been used and its claims set forth as far back as 1800, in "a work by Humphrey Davy, entitled 'Researches, Chemical and Philosophical, chiefly concerning Nitrous Oxide or Dephlogisticated Nitrous Air and its Respiration.'" But it was admitted to have increased sensibility and irritability, by the author and others, instead of diminishing it, and the repetition of these experiments by Dr. Horace Wells, of Hartford, Conn., in 1844, failed to render his subjects insensible to pain. In a pamphlet recently put forth, Dr. Wells' claims are again urged, and at the recent meeting of the American Medical Association the discovery has been voted to him; though it is admitted in the pamphlet that Dr. Wells failed to convince his hearers in Boston. This lecture, with the experiments, was delivered in the fall of 1844, and the first experiment made by Dr. Wells, on himself, was December 11th, of the same year. It will be seen presently, that this was two years after Jackson's use of sulphuric ether on himself. But, it is alleged, that Wells had made the remark as early as 1840, "That he believed that a man might be made so drunk by this gas" (Nitrous Oxide) "or some similar agent, that dental or other operations might be performed upon him without any sensation of pain on the part of the patient." Whereas, Jackson had been using "ether vapor" as far back as 1837, for counteracting the suffocating effects of chlorine gas, "and" (we use his own words) "I had made this discovery known at the time to most of the chemists with whom I was acquainted, and it was adopted extensively."

How Dr. Jackson made this great discovery will be shown in another article.

Department of Mining and the Mechanic Arts.

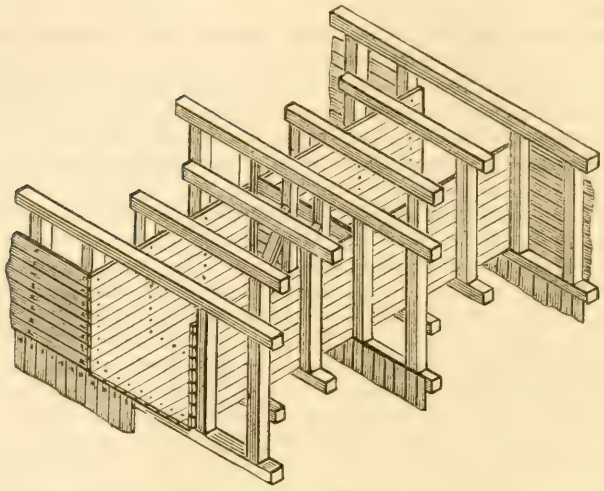
Depreciation of Machinery, etc., Per Annum, on First Cost

	Depreciation.	*Wear and Tear.*	*Total.*
Engines	6 per cent.	3 per cent.	9 per cent.
Boilers	10 " "	8 " "	13 " "
Machines	7½ " "	3½ " "	11 " "
Mill-work and Gearing	4 " "	2½ " "	6½ " "
Bands and Belts		45 " "	45 " "

"A" wishes to purchase a second-hand engine and boiler that has been in use three years; the original cost of engine was $1,200 and the boiler $1,000; what would be a reasonable price for them provided they have been well cared for?

Answer: Total depreciation of engine for three years, 27 per cent. off, value, $876; boiler, 49 per cent. off, value, $510. A. Y. L.

Design for Floodgates.



The frequent demands made upon me of late for an improved water-way, induces me to offer through the pages of THE RURAL a design that I have carried into execution in several instances, and which has invariably given satisfaction, and which you may entertain no fears of ever blowing up if these simple directions are followed.

The establishment of fish-ponds, mill-powers, for either ginning, sawing or grinding, are very properly to be considered as adjuncts to farming operations, and in this light I here offer a suitable device for that all-important feature in the construction of a dam.

Having determined upon the width and the length of the water-way, proceed to frame as many sets of mud and cap sills and posts as will be required, placing the sills four feet from centre to centre; observing that the end sills and the middle sill are longer and contain two more posts each than the others. The object of these additional posts are for wing or retaining walls, and are to be boarded up as shown on the drawing. After all the work of framing has been completed, proceed to excavate near the land side or bluff, if there be one, to the full depth it is intended to go, and remove the earth for some distance on either side of where it is intended the foundation sills to rest. This precaution must be taken in order to have free and unobstructed space to lay the mud-sills carefully and level.

After all the mud-sills are laid, pile the upper and lower sills on the outer sides, and also the middle sill on the lower side. This is the sill upon which intermediate posts are to be erected and let in with a tenon. On these posts the breast is formed, with the gates to move up and down. The design will fully illustrate the construction of the whole, and it only remains to observe that as soon as the planking is ready to go on, that one plank on each side must be put on first and the floor afterwards cut up to the sides, and not put down the floor first and put the walls on it, because if there be any settling in any of the mud-sills the floor will leave the walls and a crack will be formed.

Size of the Timbers.—Mud and cap sills, 10x10; posts, 10x10; sheet piling, 1¼x10; walling, 1¼x12.

Having recommended to my readers the most economical and efficient water-way, I shall in my next furnish them with a plan for a mill and gin-house, and the best mode of applying their power.

ALEX. Y. LEE, Civil and Hydraulic Engineer.

THE RURAL CAROLINIAN.

VOL II.] CHARLESTON, S. C., OCTOBER, 1870. [No. 1.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

"PROGRESS WITH PRUDENCE."

Our motto was not adopted without careful consideration. Each word was well weighed with reference to the proper balance of parts. We believe in improvement—in better implements, in more effective methods of working, in the introduction of new crops and industries, in the reorganization of labor—in a word—in "PROGRESS." But there is such a thing as going too fast and too far, even in the right direction. We must keep step with the general movement of the world, which is slow; so we add—"with PRUDENCE."

We advocate deep ploughing, subsoiling, heavy manuring, underdraining, irrigation and thorough cultivation; but we do not advise every man to turn over his land to the depth of ten inches, or to subsoil, or underdrain, or irrigate it, regardless of circumstances. Prudence requires that where there is no other guide, careful experiments should be tried with a small portion of the land to ascertain the effects of any new operation. Heavy manuring is one of the great secrets of successful farming; but Prudence suggests that the manure should be in such a condition and so applied that it shall not burn and destroy instead of promoting the growth of the crop. Hundreds of farmers, disregarding this suggestion, have this season applied caustic commercial fertilizers of undoubted value to their heavy loss—getting less cotton than they would have got without any manure. So, thorough cultivation, without Prudence, may kill the corn as well as the weeds.

Wheat, Barley, Oats, Clover, Oat Grass, Rye Grass, Red Top and Orchard Grass, are all excellent crops for the South, but were all our readers to drop everything else for any one of them, there would be thousands of failures and great disappointment. Wheat cannot be profitably grown everywhere and on all soils, nor can the grasses we have named. The Castor Oil Bean, Bene, Jute, Broom Corn and perhaps Ramie, are destined to become important Southern crops; but, as we have said before, our farmers should enter cautiously upon the cultivation of new crops of all kinds. Do not allow yourselves to be misled by a single successful experiment, and especially beware of the representations of persons of whom you know nothing, and who have seeds and plants of some wonderful new fruit, grain, vegetable or textile for sale. Again, do not allow the outcry against cotton, or the low price of the staple, to cause you to abandon it altogether, if your soil and climate are suited to it. The white king is not dead yet, nor likely to die; but, on the other hand, do not, we beg you, neglect everything else for cotton. Make your own provisions and grow your own stock, and you may snap your fingers at the cotton speculators and defy the world.

Improve your soil, improve your stock, improve your implements and methods of working, improve your knowledge of scientific and practical farming by reading the best agricultural journals and books—join us in the grand march of PROGRESS—with PRUDENCE.

THE AUTUMN FAIRS.

The present month opens the fair season at the South. First on our list are the Tennessee State Fair, Nashville, October 3d–8th, and the Georgia Central, to be held in Macon on the same days. Next come the North Carolina State Fair, at Raleigh, October 18th–21st, the Georgia State Fair, at Atlanta, October 19th–26th, the Cotton States' Fair, at Augusta, Ga., October 25th–29th, and finally the Mississippi State Fair, at Jackson, October 24th–30th. In November, we have first

the fair of the South Carolina Institute, Charleston, 1st–5th, and the Virginia State Fair, which opens at the same time at Richmond. The South Carolina State and Alabama Union fairs follow on the 9th–11th, the former at Columbia, and the latter at Selma; and the Cape Fear, at Wilmington, N. C., November 11th–17th, closes the list.

We trust that all these fairs will be well attended, and prove in every way successful. If the people will take hold in earnest they can easily make them so. We would say to everybody: "Be an exhibitor if you can at your State or County fair, or at both, but if you cannot do this, go and see what others exhibit; learn what improvements are being made in implements and systems of cultivation, in stock and in domestic manufactures, and go home resolved to make good use of the lessons learned."

The Agricultural Fair is the farmers' own institution, and he should see to it that it is made an efficient instrument of progress and improvement.

WHAT IS IT?

In a letter from a friend in Camden, S. C., occurs the following paragraph:

"So-called *rust* has very materially reduced the cotton crop prospect here; and yet *it is not rust*. What is it? Can you not tell us in THE RURAL? It does not readily attack the plant when there is humus in the ground; exhausted sandy lands, and whitish or light colored clay lands are sure to have it. Most of my cotton is this year in fresh lands, with two hundred and fifty pounds of "cotton food," "Wando," or Etiwan No. 1 to the acre, and has escaped as yet, except in a spot or two where I looked for it as predestined anyhow."

Well, we have never seen the patient nor encountered the disease, but if our friend has reported the case correctly the diagnosis is not difficult, though it is too late for therapeutic treatment. That cotton is dying or has died of starvation; too much to drink and not enough to eat. That section of our State has been greatly favored during the past summer with frequent showers. This induced a luxuriant growth of weed. When the time came for this weed to go to work and bear fruit, there was nothing in the earth to fructify upon, and in its natural effort to supply this lack of food, it became exhausted and died. If this is not the cause of this blight, why was not that cotton attacked which was fertilized?

Stall-feed a horse or a mule, and bloat him on green food until he is almost dropsical, and then put him to hard work, and in forty-eight hours he will be a skeleton. Does our friend see the analogy?

The "spot or two" spoken of at the close of the paragraph must have rust; it cannot be affected as the unmanured cotton is, else it could not have been "predestined," unless this peculiar disease was predestined, and if it had been, then steps should have been taken in the spring to avoid it.

D. W. A.

OUR NEW VOLUME.

In commencing a new volume, we return our sincere thanks to our subscribers for their prompt renewal of subscriptions, as well as for the new names which many of them have sent in. We trust the good work will go on until every reading family in the South shall welcome our monthly visits. In regard to the future of THE RURAL CAROLINIAN, we might content ourselves with pointing to the past. Look over the twelve numbers embraced in our first volume. Have you not received your money's-worth many times over? But we are not content with this. We can and will make the volume now commenced better than the last—more instructive, more entertaining—and every new subscriber added to our list will increase our ability to do this, and extend the sphere of our usefulness.

ENTOMOLOGY.

We call special attention to our Natural History Department. The arrangement we have made with Mr. Chas. R. Dodge, of the Department of Agriculture at Washington, an intelligent, devoted and well informed young naturalist, we deem a highly important one. Insects being among the most serious obstacles with which Southern farmers and gardeners have to contend, it becomes of the utmost moment that we learn all we can of the habits of the various species, and the best means of destroying those that are

hurtful, while preserving the useful ones. If our readers will heartily coöperate with Mr. Dodge by sending him specimens, inquiries and information, great good may be accomplished.

THE SEASON AND THE CROPS.

We hear of some disasters to the cotton crop in limited portions of the country—drouth in some places, too much rain in others, or an alternation of the two; rust here and the caterpillar there, but none of these drawbacks seem to be wide-spread, and we see no reason at present to change the opinions heretofore expressed in regard to either cotton or corn. There are good crops of both for the area planted. We regret that it was not greater for corn.

FAMILY READING.

Believing that we can, without detracting from the value of our magazine as an agricultural journal, make it still more interesting to all the members of the family by devoting somewhat more attention than heretofore to literary and miscellaneous reading, we commence in this number the Literary and Home Department, in which we shall publish stories, sketches, essays, poetry and literary and domestic miscellany, which shall be both entertaining and instructive. Will not our dear friends, the ladies, interest themselves in our behalf, and help us to make this department an attractive feature of The Rural Carolinian.

MR. DAVID DICKSON'S BOOK.

Mr. Dickson's "Practical Agriculture" contains his celebrated "Letters," as well as other important and useful articles—in a word, it developes in full "the Dickson System of Farming." How he plants and works cotton, corn, and other crops; what manures he uses and how he applies them—how he makes good crops every year in spite of drouth—all are told in the book in his plain practical matter-of-fact way. It is the work of a man who knows what he is talking about, and has done, and is doing, just the thing he advises others to do. That is the kind of writing to do good, and we are glad to know that the work is selling well.

The Mississippi State Fair opens at Jackson, October 24th, and we are glad to learn that every arrangement has been made to ensure a grand success. We beg to express in behalf of ourselves and Col. D. Wyatt Aiken our most hearty thanks for complimentary tickets, and our sincere regrets that we shall not be able to attend.

Contributors will oblige us by making all articles as brief as the proper presentation of the subject will permit. Write no long introductions; come at once to the subject to be treated; use no unnecessary words; and when you have said all that is essential to a clear understanding of the matter, stop at once.

We have received Premium Lists of Fairs too numerous to mention here, but we have looked them over with pleasure, and shall preserve for future reference. The List of the South Carolina Institute Fair is worthy of a special mention, as having combined with it a beautifully illustrated Guide Book of Charleston and Vicinity.

We shall be glad to receive from the friends of agricultural and horticultural progress in all parts of the world, specimens of new, rare, or curious plants and seeds, for the purpose of testing them on our own grounds and reporting the result through The Rural Carolinian.

All articles intended for publication, and all inquiries relating to subjects treated in our columns should be addressed to the editor, and all subscriptions and business letters to the publishers.

Experiment carefully, observe closely, note the results accurately, and report them clearly and concisely through The Rural Carolinian.

Articles intended for any particular number must reach us nearly a month in advance of its publication in order to secure insertion. For instance, the matter for the November number will be put into the printer's hands the first week in October.

We are under continued obligations to Hon. Horace Capron, for the monthly Reports of the Department of Agriculture and other important documents.

FARM AND GARDEN NOTES.

Maltese Sheep.

This is a well marked and peculiar variety, supposed to have originated from a cross between a ram and a she-goat. The breed is said to be well adapted to Southern climates. It has been introduced into Algeria by the French Government.

A Spanish Maxim.

The Spaniards have a maxim that a man is ungrateful to the past generation that planted the tree from which he eats fruit, and deals unjustly toward the next generation, unless he plants the seed that it may furnish fruit for those who come after him. The descendants of the Spaniards in South America are accustomed to act upon this maxim at the present day. A good example.

Fresh Manure.

The Boston *Journal of Chemistry* says that manure is never so valuable as when it is fresh. It then holds in association not only all the fixed soluble substances natural to the solid excrement, but much that is of great value found only in the liquid. It is in a condition to quickly undergo chemical change, and the gaseous, ammoniacal products secured are double those resulting from that which has been weathered in a heap out of doors for several months.

Thirty Acres of Flowers.

C. L. Allen & Co., Florists on Long Island, New York, have now thirty acres planted in flowers, of which eleven acres are covered with solid rows of tuberoses, supposed to average 80,000 good bulbs per acre, or 900,000 in all. Of gladiolas there are seven acres, and of lilies six acres. The field of *Lilium auratum* alone will furnish 75,000 bulbs.

Latakia Tobacco.

C. H. Barrows, in *Rural American*, says he planted a package of Latakia tobacco seed from which he raised twenty-one plants, the leaves on which were twenty-seven by eighteen inches. It is far different from American tobacco, and in regard to its adaptation to the climate of the Southern States, the writer predicts for it a greater success here than in Connecticut.

A Hint to Orchardists.

In setting out young orchards, always register the varieties immediately in a book, where they may be referred to in a few years, when the trees commence bearing, and the labels are lost, and name forgotten.

A New Beet.

The *Dark Red Early Egyptian Beet* is very highly spoken of for its earliness and excellent quality. It is of a deep red color and flat in shape, like a white Dutch turnip.

INDUSTRIAL ITEMS.

The "non-conductor" manufactured by the Norfolk Non-Conductor Company, for application to steam boilers, pipes and cylinders, is proving itself a most valuable invention, commending itself for economy, safety, durability and comfort to all who use steam or are exposed to heated surfaces. Its use in our own establishment enables us to speak of it with confidence.

——The New Orleans *Times* says of the new ramie machine: It consists of a series of rollers for crushing, disintegrating and cleaning the plant in a green state, and for putting the fibre in such a condition as will make it available in the market. The general value of the ramie plant has been proved beyond a question; but the difficulty up to the present time has been the discovery of some apparatus which would separate the fibre from the vegetable or gummy matter. This machine Mr. Lafranc has now invented, and has proved its value by undoubted experiments.

—— An important improvement in the manufacture of horse collars has just been devised by a Philadelphia mechanic. The collar being stuffed with elastic cork, is light in weight and adapts itself to the shape of the animal, as if it were moulded. It is highly elastic, does not chafe or gall the neck, and the cork being a non-conductor, injury from the heat is prevented.

—— A machine has been invented by Mr. G. W. Grader, of Memphis, which, if but half which is claimed for it be realized, will add greatly to the wealth of the South. It is called the "Linter," and by it the waste from the cotton gin known as "motes," and

heretofore of no use except as a fertilizer, undergoes a cleansing process, by which it is freed from its impurities and made into a good ordinary cotton suitable for batting or a coarse article of goods.

—— The newspapers of the Southwest bring us glowing accounts of the performances of a new cotton gin, which has just been tested in St. Louis. By it the labor of picking the cotton from the bolls is said to be entirely dispensed with ; and it is now only necessary to pluck bolls, cotton and all from the stalk. It is estimated that one hand can pick one thousand pounds in the new way quicker than a person could one hundred and fifty pounds after the old style.

MERE MENTION.

Mr. Simms' address on "The Sense of the Beautiful," is not for sale at the bookstores, as incorrectly stated in our last number, but is published for *gratuitous* distribution, and can be procured at the bookstores free.

——Lennig's White is a strawberry of the very best quality, but only a moderate bearer, like most other high-flavored sorts.

——Apples are said to succeed finely in Gadsden County, Florida. Early June and Horse Apples are the kind most grown, and they sell from ten to eighteen dollars per barrel in Jacksonville and Savannah.

——Six tons of figs and two tons of strawberries, were thrown into San Francisco Bay in one day last summer.

——Florida will make a larger crop of sugar this year than ever before, it being found to pay better than cotton or the cereals.

——It is said that Hale's Early Peach rots only where the ground is cultivated. When in grass or in oats, the fruit is sound. Has any reader experience bearing on this point ?

——*The Horticulturist* pronounces *Mrs. Pollock* and *Mountain of Snow*, two of the best geraniums for general cultivation.

——The general belief that the charring of timber promotes its durability does not appear to be well-founded. Experiments have shown, on the contrary, that the charred timber decays sooner than the uncharred.

——The average yearly importation of Champagne for the past five years is stated at 121,054 cases of one dozen each.

——The average production of strawberries per acre in New Jersey, is 1,200 quarts; in Delaware, from 1,500 to 2,000. The average profits per acre in neither exceed $100.

PUBLISHERS' DEPARTMENT.

THE DELIVERY OF THE RURAL.

It is our desire that THE RURAL CAROLINIAN shall reach every subscriber by the first day of the month. To attain this we commence mailing on the *twentieth* day of the preceding month, sending to our most distant subscribers first. We not only direct with great care, but we counter-check from our mail books. The magazines are then placed in large baskets, and the baskets double locked and sent by responsible parties to the postoffice, where, with the duplicate keys in the custody of the postmaster, they are opened, the magazines taken out, and the baskets returned for another load.

Our subscribers will thus see that we use all care to have them directed properly, and every magazine placed in the postoffice. Yet, in spite of our precautions, we have complaints from our subscribers occasionally, that their numbers are missing. It is extremely annoying to them. THE RURAL has become a household and farm necessity, and even delay, not to speak of loss, is vexatious. We have our suspicions of where the fault lies—it is not with us—and the management of the Charleston Postoffice, which is excellent, prevents our attributing the blame to it. We do not care about making any accusations until we can support them by proofs ; so we invite our subscribers, who are equally, if not in a greater degree interested with ourselves, to help us to find out the true causes, and by exposing it prevent a repetition of the evil. We shall be glad to have any proofs or information which will assist us in correcting

the trouble. We are determined to find it out. Our subscribers must receive their numbers as promptly as we send them, or it will be from a cause far beyond our control.

Reader, can you not help us?

RENEWAL RECEIPTS.

We will send the receipts for all renewals of subscriptions in the *number* of the magazine following the date of the reception of the remittance by us. This is allowed by the Postoffice Department, and will save us considerable time and money. It is the usual custom with magazines.

TO AGENTS.

While we would be much obliged to our agents to use their kindly influence in securing it, yet we CANNOT AFFORD to allow them—the agents—commissions for renewals of subscription.

This course is customary with all magazines.

BOUND COPIES OF VOLUME I.

Orders will now be received for BOUND COPIES of the FIRST VOLUME, to be delivered October 1st, 1870. This will be a handsome volume of 800 pages, illustrated with more than 250 engravings on wood, stone and steel. among which are first-rate likenesses of David Dickson, the great Farmer; De Lesseps, the great Engineer; Liebig, the great Agricultural Chemist; Gen. Capron, Commissioner of Agriculture; W. Gilmore Simms, the great Southern Novelist, and others. Price only $2 50. We cannot afford to prepay freight. It cost to send it per mail forty cents, and on the line of the South Carolina, Northeastern, and Savannah and Charleston Railroads, per express, twenty-five cents. Include *amount* of freight in your remittance. Address

WALKER, EVANS & COGSWELL,
Charleston, S. C.

BIND YOUR VOLUME OF THE RURAL CAROLINIAN.

To enable our subscribers to preserve THE RURAL CAROLINIAN, we will bind in full cloth, gilt back and sides, so as to make a handsome volume for $1, or we will forward the cases for 75 cents. Or, we will bind in half leather, library style, for $1 25 per volume.

In ordering, please to specify whether cloth or leather binding is wanted, (the "*cloth*" is much the handsomest and strong enough, but he "*leather*" is the strongest,) and gives plain directions, how we can return the volume to you, which must be at your expense.

WALKER, EVANS & COGSWELL.

RATES OF ADVERTISING.

The attention of advertisers is especially called to the following rates of advertising, as no advertisements will be received at less than these rates:

	1 Mo.	2 Mos.	3 Mos.	6 Mos.	1 Year.	REMARKS.
1 page.....	$25	$45	$60	$100	$180	Outside back cover
¾ page.....	20	37	50	80	140	double rates. Inside
1 column	15	28	40	60	100	back cover, 50 per
¾ column	12	22	30	50	90	cent. added to rates.
½ column	10	18	25	40	75	No advertisements
¼ column	5	9	13	24	40	taken for front cover.
⅛ column	3	6	8	12	20	

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

THE FRUIT QUESTION.

Editor of The Rural Carolinian:

I have read with much interest the article by W. B. Wilkes, of Aberdeen, Miss., on "Apples Spotting." Mr. Wilkes is well known for his devotion to fruit culture, and his opinions must carry weight with them. I would be greatly indebted to him if he would, in his articles on the Apple, explain to me and your readers the following:

I have an apple orchard of about two acres, fifteen years old, on stiff, gray land, with red clay subsoil, in a flat, rather than a hollow, between two ridges, and bearing several varieties (names unknown) that ripen from 1st of August to middle of October. Since the war, the trees have not been all trimmed; and last January I observed about half dozen Rusty Coat (?) trees were very thick with small shoots and twigs of last year's growth. Four of these I thinned out considerably, and cut off the extremities of all the larger limbs. This season these four trees have shot out at least double as many twigs as I cut off, and, though covered with blooms in the spring, have not had an apple on them this summer; whereas, the two trees left with their innumerable shoots are, apparently, no more dense in their foliage than they were last season, and are now loaded with fruit. The inquiry is, did trimming the trees prevent their bearing? and if so, why?

Will Mr. W. please permit and answer another inquiry. Should apple trees fifteen years old, with healthy, stout bodies, and beautiful umbrella shaped tops, ever be trimmed or manured? If either, or both, please say how, and at what time? A FRIEND.

PLANT WHAT WILL PAY BEST.

Editor of The Rural Carolinian:

Mr. J. G. Williams, whose article is published in the September number of THE RURAL CAROLINIAN, does not state where he lives, and what pays best in his section, or perhaps we might find out what he is planting; but I will venture the assertion, that if he is a planter at all, he plants corn because he can make more money by so doing than he could by planting cotton. And it is generally the case, that among the writers advocating corn planting instead of cotton, there will probably be found few, if any, that do not write from a section where corn produces abundantly.

If planters find upon experience that their corn crops yield them good profits, they will certainly plant corn, without advice; if however they find that they cannot make enough from corn to pay their hands even, but find that by planting cotton on their lands they can not only produce enough to buy all the corn they want, but leave a handsome profit besides, they would be fools not to do it.

"Philosophy" does very well, but common sense is better. Take my case for example: I listened to their ravings contrary to my better judgment, and planted corn to a certain extent; fortunately I planted cotton also. I made literally nothing on corn, but expect to make a good crop of cotton, the profits from one acre of which will buy as much corn as I made on forty acres. And yet Mr. Williams wants me, regardless of soil, climate, common sense and experience, to plant corn, and starve? I might as well advise everybody not to use subsoil ploughs, because they do not suit my lands. Mr. J. G. Williams evidently has corn on the brain, and the only way to cure him is to take him where corn is not profitable, and let him plant it, and not only live on it but clothe himself and family (for we must all have families he says) with it. I imagine they would very soon begin to shiver. P. R. F.

That there are exceptions to all general rules is a fact that should always be taken into account, and probably Mr. Williams will be as ready as any one to admit it; but the circumstance that our correspondent and others in limited portions of the country can not grow corn profitably, does not invalidate the statement that too many of our planters have had "*cotton* on the brain" to their serious damage.

SO-CALLED PROLIFIC CORN.

Editor of The Rural Carolinian:

In the July number, I notice an article headed "So-called Prolific Corn."

I presume I am the Mr. Ellison referred to, as I am the only man by that name, so far as I know, who sells corn recommended to be prolific.

"Planter's" experience is entirely at variance with mine, and that of every other person from whom I have heard. If "Planter" had followed the directions given by me, published in the *Southern Cultivator*, I guarantee the result would have been very different, which I can prove by many witnesses.

My corn does not have large stalks, does not have shoots as long as a man's arm, does not have large cobs. Character of my corn is a small cob, well filled from end to end, and small stalk of moderate height; and three measures in the ear will make two of shelled corn. I have never had cotton seed to use at the rate of thirty-three bushels per acre, so cannot say what the result would be, from my own experience.

I would be happy to make the acquaintance of "Planter," and cordially invite him to visit me on my plantation and see my corn growing, and I will show him corn growing from one to six ears to the stalk, that was manured with wheat straw, oak leaves, pine leaves, and lime, down to poor sedge lands with no manure at all.

THOMAS T. ELLISON.

Knowing "Planter" well, we can assure our correspondent that he would be the last man to do intentional injustice, and that he will be very glad to be convinced that the corn in question is really "prolific."

THE AMERICAN STOCK JOURNAL.

Editor of The Rural Carolinian:

I noticed in your journal a month or two back, a notice of the *American Stock Journal*, published by Messrs. N. P. Boyer & Co., Parkesburg, Chester County, Penn. The journal seems to be gotten up chiefly to advertise the stock said to be owned by those gentlemen. Several months ago I sent them some money for eggs and the journal for one year; the journal came, but no eggs. After writing twice and no response, the journal also ceased coming. I write this that others may be warned.

There is no way that I know of to avoid swindling concerns except by making them known to the public. WM. ALSTON, M. D.

Lost Mountain, Georgia.

This, we are sorry to say, is not the only instance in which complaints concerning the business dealings of N. P. Boyer & Co. have reached us. For the credit of the press we

should be glad to believe them groundless, but till we shall be satisfied that they are so, we beg our readers to consider any favorable notice we may have made of their journal as withdrawn.

TO "AN OLD PLANTER."

Editor of The Rural Carolinian:

My reply to "An Older Planter" (whom I take to be a very young man, and not engaged in planting at all) is, that prior to the war I made good crops on the plantation referred to; and that in my article entitled "Facts and Figures for Rice Planters" I said "Rice has been made and can be made again," implying that it is not made now. I think upon a careful reperusal of said article he will find the reason why it is not made now.

JAS. C. MCCANTS.

Walterboro', S. C., September 3d, 1870.

ERRATA.

To the Editor of The Rural Carolinian:

In Vol. I, pp. 683 and 686, in the illustrations, figure 4, for "*cocoon*," read *pupa* or *chrysalis* in both places; and also at figure 2, p. 694; p. 684, line 23, for "*infinite*" before "time," read *indefinite*. Page 691, ninth line from bottom, read *G. arboreum*, or *Gossypium arboreum*.

D. L. PHARES, M. D.

NOTE.—We have still a large number of excellent communications for this department, for which we are unable to make room. Fortunately most of them are sound enough to keep, and we shall find a place for them in future numbers.—ED.

INQUIRIES AND ANSWERS.

Several correspondents inquire for a cure for what is generally known as *Sore Head* in fowls. "They get blind, the eyes become sore, and sometimes the whole head is scabbed over with a yellow or whitish concretion. In addition to this they gape and seem to breathe with difficulty. Death generally ensues." This disease is not necessarily fatal. When the fowls become totally blind they die from starvation. If food and water can be forced down their throats, while the blindness continues, they will generally recover. Bicarbonate of soda, (an ounce to he pint,) in their water, will promote a cure. Also mix ten drops of carbolic acid with one ounce of sweet oil, and apply to the sores with a feather. It is essential, in the first place, to remove the fowls to new quarters, giving them a dry, clean airy place. This treatment we have tried and know it to be good.

——W. J. C. writes: "I have seen in your valuable journal several articles in respect to Farm Accounts, and urging the importance of our keeping them. I have never kept such accounts, but I am satisfied that I should, and wish to commence with the new year. Can you tell me where I can get a suitable book; I want one which is explicit, but not too much 'red tape?' P. S.—Can you give me a good remedy for "botts in horses?" Yes, W. J. C. is right. Book-keeping pays, and we are glad to see our readers waking up to the fact. Messrs. Walker, Evans & Cogswell are now preparing just such a work as you want. It will be ready about the middle of October. Will some experienced friend give us the best treatment for botts?

——"A Constant Reader" is much mystified by the statement of Col. D. Wyatt Aiken that "*The old-fashioned wooden plough*, the hoe and the grain-cradle are the negro's most effective arms for plantation work." He adds, "The old-fashioned wooden plough spoken of must be very old-fashioned indeed, as they have not been in use in this State (North Carolina) for the last sixty years, that I have ever heard of. I was firm in the belief that 'the old-fashioned wooden plough' had long since gone out of use in all of the States where colored labor was ever employed."

——W. L. G. has tried to make *Scuppernong Wine* without sugar, as recommended by a writer in North Carolina, and failed, making very good vinegar instead. Can any one tell him how the thing can be done, if at all? Some of our friends in the Old North State ought to know.

—— The specimen of *clover* sent by H. W. P. was too much broken up when received to be identified. Thanks for the *Rye Grass*. The other grass we cannot make out. Send us a *pressed* specimen next season.

—— Dr. Henry Perrine, in his memorial to Congress in behalf of his South Florida scheme, speaks of the *Uva de Todo Tiempo*, or Everbearing Grape of Campeachy, "whose clusters of fruit ripen every month in the year." Can any one tell us anything further about it?

——A Texan correspondent inquires concerning the *Istle* or *Ystle* referred to by Mr. Alex. G. Macrae, on page 17 of this number. We believe it is a plant of the Pineapple family, (*Bromeliacæ*,) whose leaves furnish the fibres of commerce known a *Pita* or *Istle*, and that it is indigenous in the forests of Mexico, where also it is cultivated in a rude way by the natives. Our correspondent, Prof. S. B. Buckley, of Austin, Texas, could, perhaps, give us an account of the plant and its proper cultivation. Will he let us hear from him on the subject?

——J. wishes some one to explain the action of *shell lime* on land, how often and in what way it should be applied, and if it would be allowable to compost it with ashes?

——Will some one give us an article on *hay-making*—that is, the cutting and curing of the grasses and clover?

——C. inquires, "If *onions* sown in drills, eighteen inches apart, can be as well grown where planted, or if transplanting is necessary or better?" We think it neither necessary nor better, but the plants removed in thinning out may, perhaps, be profitably replanted.

——The grass sent by A. A. P., Austin, Texas, is new to us. Mr. Ravenel, to whom we referred the matter, believes it to be *Panicum Texanum*, (Buckley.) We can at present give our correspondent no information concerning it. Prof. S. B. Buckley, of Austin, probably knows its history and uses.

——Some one who is familiar with the *sumac business*, will confer a favor on several inquirers, by giving us information on the following points, and others that may be thought essential: When to gather the sumac; what part of the plant to gather; how to prepare it; and how to pack it for market?

——We are asked for a cure for the *gapes* in chickens. We have published several modes of treatment which sometimes result in cure, but none of them are fully satisfactory. Can any correspondent give us anything better?

——A correspondent wants a peck or more of Japan Clover (*Lespedeza striata*) seed. Any person who can supply it, will please address us at this office, stating price.

LITERARY AND HOME DEPARTMENT.

THE MURILLO DE LA MERCED.

CHAPTER I.

It is a long time now since I was twenty-three, and a student in the Royal Academy. I had loved and practiced my art, enthusiastically, before school-time, in and out of school-time, and since school-time—as child, youth and man—for sixteen years; and, there can be no doubt, had been overdoing it. My thin face and hands were white and hectic as a ballet-girl's. I had, too, a tightness across my chest that the doctor said was rather alarming, and for which he prescribed a year or two of Italy. Seldom do patients anticipate taking their medicine with so much delight as I did. Why I did not use mine at once was a want of means to pay for it. I had friends who would have helped me if they could; but, like myself, every one of them only lived from hand to mouth. Of relations I had but one, who, if he had the will, was in a position to assist me, and he was settled in Spain. Taking heart of grace, I made appeal to him. I sincerely wish that every nephew in circumstances such as mine may find an uncle as kind. He placed to my account with his correspondent in London a sum larger than I had asked; expressed great affection for and sympathy with me; but disapproved of my medico's prescription, and recommended a different mode of treatment. There was no climate in the world, he insisted, so likely to do me good as that of Spain; if I required nursing, he promised that my aunt and cousins should make a pet of me; and, he asserted, all that artists go about the world looking for could be found more readily there than anywhere else; and, finally, he put as a question, where, besides, could I find such masters to study from as, Ponz, Polomino, Morales, Murillo, Zurbaran? The names fired me. I adopted my uncle's opinions, took his advice, and in little more than a week was looking out ahead across the Bay of Biscay for Cadiz, *en route* for Seville.

Hope and a sunny voyage set me up wonderfully; and when I got out, it was little nursing, but a good deal of feeding, that I

wanted. What a glorious life I led for a couple of years! — everything provided; nothing to care about; a hundred masterpieces within reach, and every one worth having come the distance to see; to say nothing of health, leisure and opportunity. Rich as they were in other great masters, the convents, churches, and galleries were especially rich in Murillos — the greatest painter, I think, that ever existed. Him I stuck to, as no one is ever followed up from intense love, or perhaps hate. That's how and where I got, what people call, my "Spanish style."

When I came back to England, I had the uphill work common to all who independently aspire to gain the heights of a profession. There was nothing for it but with patience to abide my time, and cherish hope while diligently working on in faith—three virtues I strenuously recommend to all in similar circumstances.

My studio was in Newman street, and I had occupied it now for five months without receiving a single commission, although the dealers—terrible screws!—had bought some five or six of my Spanish studies. I had for several weeks been suffering again from a return of my old nervous complaint, when a circumstance, which I should have thought much more likely to happen in the land I had come from than in that I was returned to, occurred.

As certain dates are all-important to the well understanding of my story, I mention that it begins in the afternoon of March 28, 1823.

I had left off work much earlier than usual; for the day, which had scarcely known a dawn, was, later, quite borne down by a thick fog of Egyptian darkness. I was battling time, till I could go out to some place of amusement, by the help of a cigar, an own-made pot of coffee, and a blazing fire, with no other light, so that the recesses of my studio were in deep obscurity. Sitting in front of the grate, I suffered my imagination to become so excited and my regards so engrossed by the wonderful pictures perceptible among the glowing coals, that neither a knock at the door nor the noise of a person entering attracted my notice. My attention was first aroused by a sound close to me—a curious sound, in which a husky wheeze and a heavy sob were both embodied. Starting up, I beheld a tall, veiled, female figure, dressed entirely in black, standing behind the chair from which I had just sprung.

"Good God!" I exclaimed, quite unnerved, "what are you?—where do you come from?"

"I gnockt, an' taught I he'ert you zay coom in," she replied in a deep guttural voice, accompanied with asthmatic gasps similar to those which had so startled me.

"Are you a model?" I asked, recovering my self-possession.

"Sare!—a mottle? I ra'ader tink not!" she answered, drawing herself up, and speaking with great haughtiness. "I is a la'atee—a rish la'atee; an' I coom apout a gommission fore you."

"A thousand pardons!—but I was taken so by surprise."

"Nefare meint—don't mention eet. Now let me talk mit you."

"Certainly, madam. I will just get lights."

"I vo'ot ra'ader not—for de zake of mine eyes. Vee can talk very well mitout."

"As you please, madam," I answered, placing a chair.

I took the opportunity of observing her. She was so thickly veiled that not a feature could be discovered; but occasionally, as they reflected a gleam from the fire, what seemed a pair of brilliant eyes flashed through the heavy pattern of the lace. A thick curl of black hair, which had escaped from under her bonnet, lay, a straggling, untidy mass, on her shoulder. She was enveloped in wrappers from head to foot, and her hands were gloved. My scrutiny was a failure.

"Curious, very!" I thought to myself; "a lady!—with that voice! Dutch, I should say,—ah!—that perhaps accounts for it."

"Vee vants you"—and curiously, in all our conversations, then and subsequently, she always used the plural pronoun,—"Vee vants you to baint a picture from de life—halfe lengt; aber, vee moos hafe a pargain."

"Certainly, madam;—what do you propose?"

"Subbose eet take you von mont': you coomes an' you leef in our house in de gountry; an' you doos eem so kevick as afer you can—an' vee gifs you two hundert kinnies."

"Delighted, I am sure, madam!" I replied, my breath so taken away by the splendid offer that I could scarcely muster enough to utter the words.

"Ferry vell!—an' vee gifs you de money at once—de two hundert now."

She marked the adverb strongly in speaking, and still more emphatically by laying down, with a thump upon the table, what appeared to be a leathern bag, from which the jingling of coin, though muffled, was clearly distinguishable. "An'," she continued, "eef you doos eem as vee ist pleast, vee vont meint to gif you anoder hundert."

"That—is—very—liberal," I managed to gasp out.

"Ferry goot! Dat ist vhat *vee* doos. Now den, vhat *you* doos ist dis. You moos gife us your vort of honor, as you stays in our house alle de time, and dat you nefare shpeak to nopotty as you sees dere—nopotty but me—not von vort; an' dat you nefare asts no kevestions—bartic'ler, as you asts no kevestions. Doos you understant?"

"Quite clearly, madam."

"Ferry goot! All de time, you under-

stant, you moos be pris'ner—you moos be *au secret?*"

"Well, it's not for very long, however."

"No longer-er as you makes to baint your picture."

"Well, madam, I must try to fight it out as well as I can."

"Yah, wohl! Dere is efery tings as makes you gom-fortable—ya'es! Den dere is 'no-derting. Vhen you 'as done dis picture—meint!—you forgits eet—you moos know nothing of eet. Eef efer you see eet, you nefare zay you baint eet. Eet is lee-tle secret. Vee makes our pargain mit you for our lee-tle secret. Vee takes your wort of honor, as von shen'l'mans, nefare to talk of eet—nefare to know nothing at all apout eet—nefare—noting at all. You understant all dat—kevite?"

"You mean, I suppose, madam, that on my part this transaction, when complete, must be as if it had never been."

"Goot gesagt! Yah!" she exclaimed, evidently pleased. "So ist's recht, kevite."

"Then, madam, I can have no hesitation in giving my word of honor to observe your stipulations."

"Nun recht! Ferry goot. Den you coom 'long mit me in our garriage," she said, rising.

"But, madam, I have preparations to make——"

"Das thut nicht! Dere is studio mit canvas, mit golours, mit eferything. But more as eferything, barticular dere ist hurry. You moos baint dis picture at once—pegin dis evenin'. Vhat you zay?—eferyting you vant ist dere."

"In that case, madam, I will soon be ready."

"Den I vait; aber, de sooner de besser."

I was in a state of ecstatic excitement. The adventure blended with something romantic in my disposition; the emolument, for a picture of the size proposed, was to me at the time magnificent; and it quickened into sudden bloom hopes that had sunk torpid in the shadow of long-continued, cold neglect. As soon as I was alone in my chamber, an ignoble curiosity, I am afraid, urged me to ascertain by sight, tale and weight of the precious bag's contents, whether I had not been dreaming. I was never in my life more happily wide awake than while counting over those two hundred and ten beautiful, ponderous sovereigns, and locking them securely away; pitching some things into my portmanteau, and, after pausing only to inform my landlady that I had a sudden commission in the country which would keep me absent for probably a month, declaring my readiness to proceed, and descending with my patroness into the street.

We found the fog so impervious that I hesitated about trusting myself to pass through the thoroughfares in the vehicle, which I could only just discern was there waiting. Not so with the lady, she entered it at once. I was not suffered to remain undecided; for a man laid hold of my color-box and portmanteau, threw them up in front, and ascended himself; while two others seizing my arms, half helped, half pushed me hurriedly into the carriage, one of them rudely exclaiming, "Now den, mister, in wid ye, blease." As his face came close to mine, the light of the lamp fell full upon it. There was no mistaking what race he belonged to—he was a Jew. Short as was my glimpse of them, it was long enough for his features to impress themselves so on my memory as to make me confident I could recognize him at any future time. It flashed upon me, also, now my attention was attracted to it, that the accent with which he had spoken was identical with his mistress's. It was, therefore, more than probable that she was a Jewess.

The moment I was in, the carriage proceeded. I found that all the blinds were carefully drawn down so as to exclude every ray of light, as well as all chance of observing the direction it took.

"A-w-ach! ah-ugh!" exclaimed, or rather coughed, my companion, her voice not at all improved by the fog; "ugh!—hafe you find de mo'oney alle right?"

At the moment I was quite grateful to the darkness which prevented the scarlet that I felt rushing to my brow from being visible. It enabled me to answer composedly, and to change the subject.

"Oh, I can have no doubt it is perfectly correct—thanks. Pray, madam, is it a lady or a gentleman I am to paint?"

"Vell, eet is a la'atee, an' part of a shen'l'man. Ach! you ought to hafe gount your mo'oney, a' look eef eet vas all goot—I allevays doos."

A lady, and only part of a gentleman!

"I beg your pardon," I said; "I do not quite understand."

"Vee is not long pefore vee is dere, an' you sees," she replied. "I tinks you vill like your supject. Do you meint to baint mit a lamp? Eet is besser you pegins de shob at vonce—dere ist no time to los apout eet."

I lay back in my corner of the carriage in a state of great mental perplexity. In the little time we had been together the language of my travelling companion had grown perceptibly coarser, and some of her expressions were vulgarly offensive. Who could she be? Where were we going? Above all, what was "part of a gentleman?" There was nothing for it but patience, and the recollection of the bag of gold at home; for however I might blush at the mention of the money, a very sound gratification sprang out of having it in positive possession. Of course I could form no idea of our direction; we were

progressing at a very slow rate, but the fog would make it highly dangerous to go faster. From the same cause, doubtless, the usual uproar in the streets was less. I could perceive at first that we made frequent turnings; but after some time the carriage appeared to go, at greatly accelerated speed, straight on; and a silence prevailed that convinced me we had got into the country. It seemed more than double the time, but we must have been boxed up the better part of an hour, when, making a sudden turn into what struck me as a gravelled sweep, in a minute after the carriage stopped.

I had by this time worked myself into a state of great nervous excitement. The circumstances which occurred as the door on my side opened, and I put my foot on the step to descend, by no means tended to allay it. A dark cloth was thrown over my head; my arms were seized by persons on each side, who irresistibly led me forward, up some steps, into a passage, as I suppose, for I heard a heavy door close behind me; and on again, first this way, then that, right and left, till all my perceptions of distance and position were utterly confused, and finally deposited me, still hooded, in a remarkably comfortable easy-chair. Between distress at being half stifled and the excitement of mystery, doubt, and apprehension, I was nearly fainting; but hearing a door softly shut, and finding my arms at liberty, I tore off the cloth that covered my face.

I found myself quite alone, and gazed around in the extremity of wonder. I was in a large and well-lighted room. The illumination was produced by a cluster of lamps disposed beneath a powerful reflector, admirably contrived and adapted for artistic purposes, and enabling me to observe that the apartment was superbly furnished as a painter's studio. The ceiling was pierced by a sloping skylight over the lamps, but no apertures for windows were visible in the lofty walls. If any existed, they were nidden by a noble piece of tapestry which covered the side on my right from ceiling to floor, as if it had been wrought expressly to its dimensions. In the angles next the tapestry, and opposite each other, were two doors of dark polished mahogany. All the walls were tinted with that dusky red which throws out so well, and relieves with warm reflections, objects opposed to it. Evidently, by the blanched color of the tinting where they were hung, these walls had been covered with pictures frequently changed; for their markings ran into or over one another in a way sufficiently convincing to an experienced eye; at present they did not carry a single canvas. On my left, judiciously placed as regarded the light, was an artist's throne—that is, an estrade or low platform—covered by a Turkey carpet, and supporting, instead of the usual sitter's chair, a verd-antique and white marble pedestal, surmounted by what appeared to be, from the level where I sat, whence the massive rim only was visible, a large silver salver. Between this and the wall hung a piece of heavy purple drapery. Close to where I sat was an old carved oak table, covered, as I perceived at a glance, with knowingly-selected implements and materials for my work, and with my own color-box and telescope maul-stick. Standing in front, and below the throne, with a canvas resting on it, was an easel. Further on, still enveloped in its baize covering, I could see a lay-figure. Here and there against the walls, or standing out upon the floor, were cabinets, tables, and chairs, various in pattern and material, but each so rare, picturesque, elegant, or curious, that, for either one of them, half the fellows I knew would have given their ears, and at once set about composing a picture to introduce a portrait of it.

It was a luxurious seat in which I found myself. I had not yet so entirely recovered from what I may as well call my fright, as to be able to leave it. Indeed, I was still trembling from head to foot. My observations certainly had discovered nothing to increase my alarm; on the contrary, they helped to compose and reassure me. It was plain, I reasoned, that not only no ill was intended towards me, but that, having been brought there for the purpose avowed, the concomitant circumstances were only such as the parties who had engaged my services thought it prudent to employ for enforcing the stipulation of profound secrecy. Why there should be any secrecy I at once determined was no business of mine; and, for the moment, in blissful ignorance, dismissed the subject from my thoughts.

After a time I assumed courage to get up and make a more minute survey of the many attractive objects scattered around. Going from one to the other, I found those I might require, each well suited for its purpose; and beside them, heaped, with little attempt at arrangement, on chairs, tables, and shelves, a profusion of costly, curious, and beautiful articles—shawls, scarfs, tissues, vases, plate, gems—so desirable for an artist's use as to make me sigh covetously that they were not "all mine and none of my neighbors'," besides wondering more and more who and what those neighbors could be.

At length my attention became greatly interested in the canvas which stood ready to receive the picture I was to paint. It struck me with astonishment to find it of real Spanish cloth, and that it was on a stretcher of Spanish oak, worm-eaten, dark with age, and undoubtedly a genuine antique. While puzzling myself why and how these things should be, I stepped upon the estrade. As I recollect that moment, I seem to feel again

the great throb that my heart gave, and the sickening pause during which I could draw no breath, at the sight which met my eyes. But for a thought as sudden as my look, that what I saw was only a work of frightful art, I am afraid to think what the effect of the shock might have been. In the deep silver salver, already mentioned as surmounting the marble pedestal, seeming freshly severed from the trunk, bespattered and bedabbled in a pool of blood, was lying a human head—that of a man, probably thirty years old—the features eminently beautiful, relieved in their bloodless pallor by magnificent black hair and a sable beard. Unquestionably it was the face of a Jew, and as unquestionably the same face I had seen and scrutinized only an hour before.

I think it was the recognition that enabled me to withstand the shock; for, while seeing it was he, I knew it could not be he. Lightning-like, under some conditions, are the operations of the mind. In less than a moment I seemed to reason and bring out my conclusion—that the man whom I had remarked by the light of the carriage-lamp must have been the model for this admirable effigy of a John Baptist's head; executed, probably, to satisfy some morbid devotional feeling. I was so convinced, that curiosity began to prevail over my first horror and disgust. But while I gazed, my sense encountered the unmistakable odor of blood and death. A convulsive desperation forced me to put forth a shrinking finger and to touch the sad cheek. Good God!—it was real—it was dead flesh!

What a horror fell upon me! The touch acted like a spell to burst the cerements of a thousand tales of crime that I had heard or read, and buried in my memory. Starting from each uprose a gashed and bloody spectre, till my imagination was thronged with frightful forms of murder. I remember feeling an irresistible terror mingled with loathing, then a sense of deadly sickness; then—I recollect nothing for a time—I had fainted.

How long an interval elapsed before I recovered I know not. My first consciousness was of some pungent essence acting acutely upon my nasal organs; and at the same time of choking by brandy, which some one was pouring down my throat. Gasping for breath, I started up, for a moment wondering where I was, and what had happened; but all the circumstances of the situation soon flashed upon me. Now others were added to them, which, if not so frightful in character, were certainly to the full as mysterious. With the tingling in my nose, and the taste of cognac on my palate—with my sable-veiled guide holding a vinaigrette in one hand, and a *petit-verre* in the other—I could not for a single moment make a pretence to myself that I was dreaming. Yet what met my look was more like the splendid creation of a vision than a being of waking reality. Standing on the estrade—lightly poised on one sandaled foot, with the other thrown just behind it, and resting only on the bent toe; one exquisitely-modelled arm hanging loosely from the rounded shoulder, the other, gracefully curved at the elbow and wrist, with the hand supported on the rim of the ominous salver by the forefinger only; the rich swellings of the pearly bust thrown high in half-profile; the wondrous visage turned towards me, with, oh, such marvellous depths of calm, wistful sorrow in the large, brown eyes!—I beheld a young female whose beauty of form and face surpassed all I had ever seen in nature or art—whose loveliness was beyond all that my happiest imaginations had ever conceived.

Her dress was superbly adapted to her beauty. Suspended from the left shoulder by an embroidered strap with a large jewelled clasp at its middle, she had on a gold-tinted tunic of some gorgeous tissue as soft and glittering as satin, but like no satin I had ever seen, falling lightly across the breast on that side, and leaving all the other, to the waist, with the shoulder and arm, bare; from under a girdle, thickly studded with precious stones, clasping the waist high up beneath the bosom, it hung in straight folds, reaching only to the knee, and terminating in a border of high-embossed ornaments upon purple velvet. The ends of a scarf arabesqued with gold figures upon a white ground, as transparent and delicate as lace, and terminating in gold fringes so ponderous and deep that it was a marvel they could be sustained by so slight a texture, were brought from behind over the hips, and fell in unequal lengths from the knot, low in front, by which they were confined. A tiara of sapphires and diamonds blazed across her forehead, and among the wavy masses of her glorious hair, rich with lights of ruddy yellow and purple shades. Clasping the upper part of her white rounded arm was a cincture of heavy gold with long pendants of emeralds; and enormous jewels, which gleamed like rubies set in circlets of pearls, hung in her small pink ears. More jewels flashed from her wrists and fingers, and from the lacings of her purple sandals. How shall I describe her further? Tall, graceful, slender, yet full and exquisitely rounded, her form looked perfect in womanhood; but among the finely-chiselled features of her face a fresh girlhood seemed yet to linger and play, despite a constant look of sorrow, so tender and mournful—so appealing—that it touched the pity in my heart, and caused it to vibrate with all the pain of her surmised but unknown suffering.

[*To be Continued.*]

A REMINISCENCE OF DR. SIMMS.

Mr. Editor: The following verses were written by Mr. Simms in the album of my sister, Miss E. Crowell, and have never appeared in print. The circumstances under which they were written were these:

He had left Charleston with a view of travelling through Alabama, Mississippi, and Georgia, but especially what was then called the frontier. The wild stories then in circulation of daring adventure and wild lawless life of the frontier had attracted his attention, and he determined to see for himself. It was upon this journey that he obtained the materials for "Guy Rivers." He reached the house of my father, Capt. Henry Crowell, on the west bank of Flint River, then just emerging from the wilderness and frontier state, on the 6th of March, 1831. The stage having broken down just then, he was compelled to remain there over night. There were several others present, but I remember at this time only Judge H. Warner, now of the Supreme Court bench of Georgia. I shall not attempt to describe the rich and interesting scene of that evening. I have no doubt that Judge Warner remembers it well. I will only state that he expressed himself completely surprised at finding so much intelligence, refinement, and taste so far away, as he expressed it, from civilization and society. Upon retiring to his room, although midnight, he asked me for pen, ink and paper, and in the morning as he was compelled to leave early, he handed me the enclosed with a request that it should be copied into my sister's album. On his return from North Georgia, or the border, near where Atlanta now stands, he again visited us, travelling at least one hundred miles out of his way to do so; my father's residence being in what is now Taylor County, thirty miles west of the City of Macon. He remained with us several days, that we might assist him in the frontier legends, vernacular, etc. Immediately upon the publication of the work, "Guy Rivers," he sent each of us a copy.

Yours, truly, JNO. CROWELL.

Columbus, Ga. —

FLOWERS IN THE WILDERNESS.

Flowers in the wilderness we meet,
And when we least suppose
The wild can yield one single sweet,
We find its native rose.

And thus, sweet maid, the stranger hears,
With heart alive and warm,
The gentle spell that wooed his ears,
When life had many a charm.

The forest late so dim and dull,
In native gloominess,
He finds with rich luxuriance full,
And blooming but to bless.

In memory once again he treads
Each scene so far removed,
And hears the voice and walks the meads
So long and fondly loved.

When gloom alone was in the sky,
And hope had plumed his wings,
Prepared in other climes to fly
For long departed things—

Beams once th' unclouded sun,
And, through the deserts gloom,
Blends many a scattered ray in one,
Bright bow of bud and bloom.

There woman, still supreme in all
That woos and wins us here,
Bright as in Eden e'er the fall,
Still blesses earth and air.

Take thou this tribute, gentle one,
And when the travellers roam
Beneath another clime and sun,
God's blessing on your home.

W. GILMORE SIMMS.

LEGEND OF THE CHEROKEE ROSE.

The legend of the Cherokee rose is as pretty as the flower itself. An Indian chief of the Seminole tribe was taken prisoner by his enemies, the Cherokees, and doomed to torture, but fell so seriously ill that it became necessary to wait for his restoration to health before committing him to the fire. And as he lay prostrated by disease in the cabin of the Cherokee warrior, the daughter of the latter, a young dark-faced maid, was his nurse. She fell in love with the young chieftain, and wishing to save his life, urged him to escape; but he would not do so unless she would flee with him. She consented. Yet before they had gone far, impelled by soft regret at leaving home, she asked permission of her lover to return, for the purpose of bearing away some memento of it. So, retracing her footsteps, she broke a sprig from the white rose which climbed up the poles of her father's tent, and, preserving it during her flight through the wilderness planted it by the door of her new home in the land of the Seminoles. And from that day this beautiful flower has always been known between the capes of Florida and throughout the Southern States, by the name of the Cherokee rose.

GOOD MANNERS.

Every household should cultivate good manners. They are indispensable even to the young. A churlish, rude deportment bespeaks a low, unfeeling mind; no position, wealth or education, can make amends for it. Good manners are attractive and winning—they should be carefully observed in every

family circle. Parents should never indulge themselves in careless manners or coarse language, much less to their children or domestics. The feelings of those in inferior stations should be regarded as well as those of the highest. The smile, the pleasant tone, and the courteous bow, is quite as highly appreciated at home as abroad. If we wish a free and easy code of manners, we must cultivate them at home, by being courteous and polite to those who surround us, and we will not only add to the happiness of those we love, but be at ease in society. Teach your children that good breeding includes civility to all—that a well-bred child is immediately singled out by an observing eye, regardless of dress or family position. A frank and modest deportment wins confidence and friends, and by kind and delicate attention to the frailer sex, and chivalrous protection to the helpless, we add lustre and greatness to our character.

A CHEAP FILTER.—The *Manufacturer and Builder* gives the following directions for a simple filter to purify cistern water: Place on the perforated bottom of a box a piece of flannel, and on this some coarsely powdered charcoal, then some coarse river sand, and cover the whole with sandstone broken into small pieces.

DIGGING FOR HEALTH.—Of all the means which can be used to give strength, tone, power and intrinsic force to the physical organization of the human being, working the soil is the best. It is better than mechanics; better than gymnastics; better than travel, though it be on foot; better than riding on horseback, or going to sea, or drinking the waters of medicinal springs.

BREVITIES

Three things to love—Courage, gentleness and affection.

Three things to admire—Intellectual power, dignity and gracefulness.

Three things to hate—Cruelty, arrogance and ingratitude.

Three things to delight in—Health, beauty and frankness.

——"Lenny, you're a pig," said a father to his little five-year old. "Now, do you know what a pig is, Lenny?" "Yes, sir; a pig's a hog's little boy."

——We often omit the good we might do, in consequence of thinking of that which it is out of our power to do.

——When is a butterfly like a kiss? When it alights on tulips.

——A concert singer having murdered a tune, subsequently tried his voice and acquitted himself.

RECIPES.

APPLE SNOW BALLS.—Pare and core several large apples, filling the holes with orange or quince marmalade, or with lumps of sugar flavored with a teaspoonful of lemon juice. Boil the apples in hot paste, (potato paste made without shortening is the best,) and make the crust of an equal thickness. Bake them in tins in a moderate oven; and ice them with a sugar frosting one-quarter of an inch thick; harden them at a distance from the fire, that they may not be browned.

LEMON DROPS.—Stir the essence or extract of lemon into refined sugar in a clean pan. Having filled a pan, with a lip, two-thirds full with paste, stir it over the fire with a bone or ivory handle until liquid. Then take it off, and continue to stir it; thickening it, if it runs too freely, by means of powdered sugar. Take off the drops from the lip by a wire, and let them fall on a bright tin plate. Remove them two hours afterwards with a knife.

HOW TO COOK TANYAH.—First peel the roots as you would a turnip, then slice and boil about three quarters of an hour. Take them out and mash in a pan. A part may be put in a small pan or dish and seasoned with salt and pepper, etc., and set in the stove or oven to brown over, and be served up hot. Another portion may be mixed with a little flour and a couple of eggs, beat into a batter, and fried like fritters; and another portion may be mixed with flour, eggs and milk, made into a batter and baked in a pan, giving you a delicious plain pudding; much better than a flour pudding because it is lighter.

BROILED TOMATO.—First, raise your tomato. If not quite ripe, no matter; cut it in two flat wise; put it skin down on a hot iron, and in two minutes (seasoned to your taste) you have a dish that is pretty, wholesome, nutricious, and *de*-licious!

Tomatoes "on the half shell!" *Exactly!* Any "Cook" can navigate where Columbus cracks the Egg! So says F. O. T., M. D., in *South-Land.*

MADELINES.—Half a pound of eggs, (four,) half pound of butter, half pound of sugar, half pound of flour; mix the butter, sugar and yolks of the eggs thoroughly, then add the flour and mix again, then the whites of the eggs, beaten to a stiff froth, grate in a little lemon rind; put in little dishes, filling each about one-third full. Bake till done.

LADY CAKE.—Two cups of flour, one and one-half cups sugar, one-half cup milk, one-half cup butter, three eggs, half a teaspoonful soda dissolved in milk, one tea-spoonful cream tartar mixed with flour.

FARM AND GARDEN CALENDAR FOR OCTOBER.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance north or south of this place must make necessary allowances for difference in the seasons.

AGRICULTURAL OPERATIONS.

The first thing in order, where the staple is largely grown, is *cotton picking*. The work should be pushed, but not too rapidly, to permit the necessary care to guard against waste. Let no *cotton seed* be wasted; we have only *begun* to appreciate its value.

—— We need not repeat our injunctions to sow *Wheat*, *Oats*, *Rye* and *Barley* largely wherever the soil favors. Farmers differ in their opinions about the best time to sow wheat, and regard must also be had to the locality and the nature of the season. We think October a good month to get in the crop. Wheat requires a soil either manured or of considerable natural strength to make it a paying crop, and the land must be thoroughly prepared. Avoid situations where there is likely to be too much moisture during the spring. Clayey loams are excellent for wheat, and rather light calcareous soils, *if in a good condition*, produce fair crops. On poor soils, sow rye in preference. Barley is a grain that has received too little attention in this country. See articles on the subject in several numbers of last volume.

——*Sweet Potatoes* should be dug toward the last of the month if there be danger of frost. We put the potatoes up in heaps, cover them with vines or litter, and let them go through the heating process before banking. They keep better and the bank requires no chimney.

—— Put up your *Bread Corn* in the shuck, to guard it against the ravages of the weevil.

—— Cut and cure your *Pea-Vine Hay*. Save also *Pindar Vines* and *Sweet Potato Vines* for the same purpose. Some late native grasses, too, may still be cut for hay.

—— During this month and the next, the State and County fairs will generally be held. Set it down as one of the things to be done, if possible, to go to the nearest fair, and, if not an exhibitor, be an *observer* and a *learner*, and if you can a *teacher* also by exchanging experience with your brother farmers.

GARDEN WORK.

Continue to transplant *Cabbages*. The plants should be from European seed. Sow seed for the spring crop. Plant out Cauliflowers and Broccoli, having the ground very rich and deeply dug.

—— *Turnips* sowed last month, if you were fortunate enough to get a stand, should be hoed and thinned. In the latitude of Charleston sowings of White Flat Dutch, or of Purple Top may still be made. Ruta Bagas (the thinnings of the rows) may be transplanted as readily as Cabbages.

—— *Spinach* for winter use may still be sown. Sow in drills from nine to twelve inches apart, and thin out to from four to six inches apart in the row.

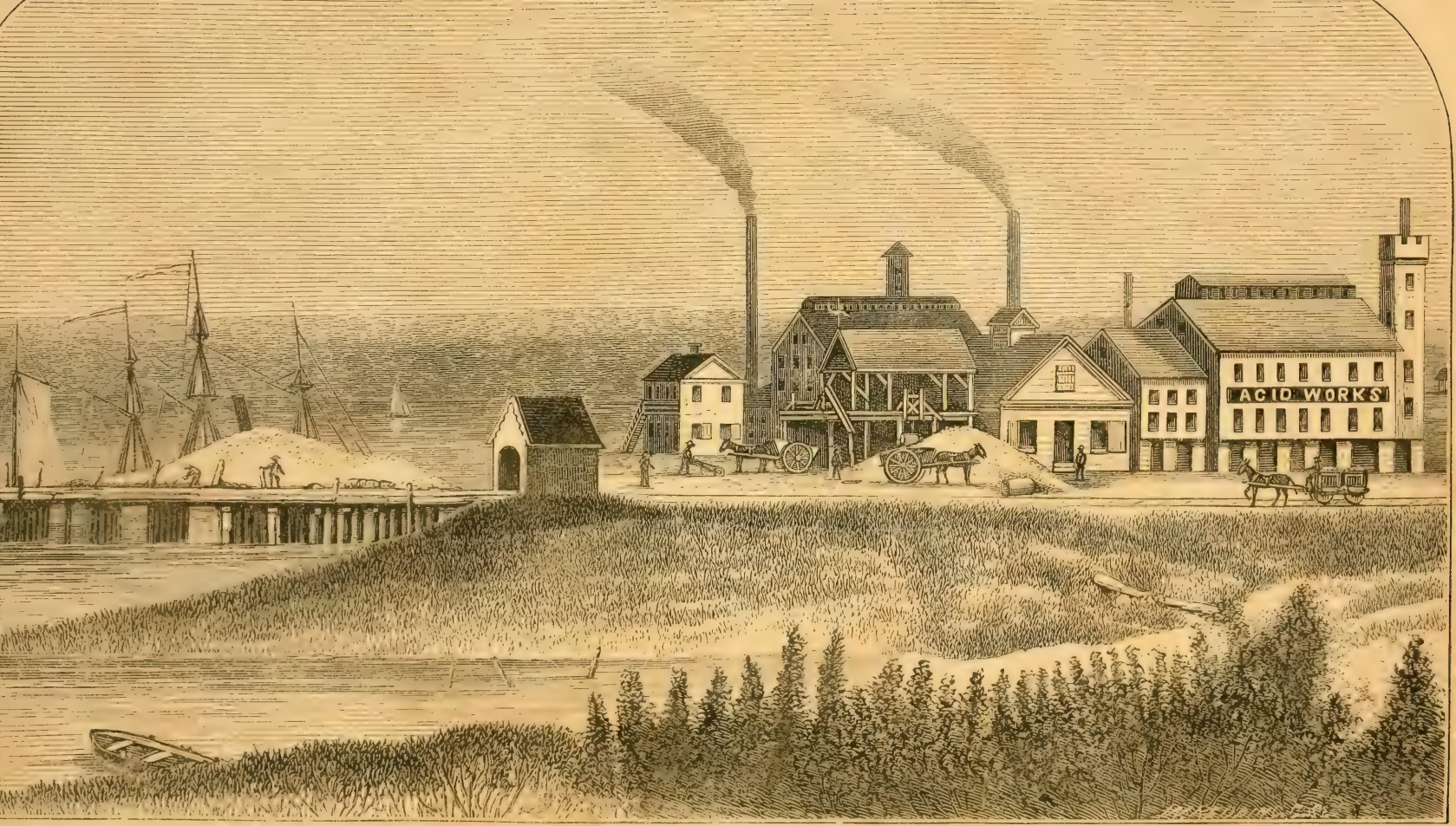
——Sow *Radishes* (French Breakfast is best) and sow and transplant *Lettuce*.

—— *Leeks* and *Onions* sets may be put out, and toward the last of the month, *Artichoke* and *Asparagus* beds should have their winter dressing.

—— *Strawberry* beds prepared last month, if not yet planted may now be attended to. Water the plants if the weather be dry. *Raspberries* may be planted toward the last of the month or in November.

—— In the *Flower Garden* any operations directed for last month, if they failed or were neglected, may be performed now, but as early in the month as possible. Continue to set out bulbs of the early flowering plants, such as Narcissus, Crocus, Jonquils, Iris, etc.

—— Clear up the garden and yards, and prepare *composts*. The salt and lime mixture will promote the decomposition of your refuse vegetable matters. Save wood ashes and soot to add to the heap.



View of their works on Ashley River, So. Ca.—See Page 109

THE

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The Maintenance of Fertility in Soils.

Colonel D. Wyatt Aiken:

Dear Sir: Accept my thanks for the valuable volume—the first of The Rural Carolinian—which has just come to hand. A letter from a mutual friend, simultaneously received, calls my attention to your article in the August number, commenting on some portions of my "Report on the Agriculture and Geology of Mississippi," and I take pleasure in availing myself of this opportunity to remove erroneous impressions, to which, in some measure, an enforced brevity may have given rise. The circumstances under which the publication of that volume took place, excluded from it all but what, with close reading and interpretation, was absolutely essential to a proper appreciation of the facts set forth. And it is, perhaps, to the resulting dryness of style, that the want of stimulative effect noticed by you is in a measure attributable; for it was far from either my belief or intention to represent the maintenance of fertility under the gloomy aspect which seems to have impressed you.

First, let me remove the misunderstanding as to the correlation of the two paragraphs quoted by you on page 697, which are perfectly consistent. Both equally assert the *improvement* of soils resulting from turning in crops, whether green or otherwise. But the first refers to the process as used for the purpose of "enriching" the soil *in order to enable it to bear other crops, which are to be removed from the field.* In this case, the green crop turned in acts simply the part for which, in many cases, lime or ammoniacal manures might equally as well be used, and with a similarly exhaustive effect. Of course, if you continue to turn in green crops, the land will perpetually improve *so long as you remove no crop from the soil.*

Instead of turning in the green crop *raw*, so to speak, it might have been fed to cattle, and their manure used instead, according to the old European system. In that case you might have "robbed Peter to pay Paul," instead of returning the ingredients to the identical soil on which it grew.

As to cattle-raising for the sake of manure, it is not, perhaps, generally understood to what an enormous extent the crops of central Europe, as well as of England, are dependent upon imported fertilizers, especially bones and guano. It was the alarming and steady decrease of the grain-bearing area in Germany which first led to the thorough investigations of the true principles of agriculture, and of the possible remedies for the threatening evil, that have rendered the name of Liebig illustrious. It sounds well enough, in poetical parlance, to speak of the "fertile plains" of Germany and Austria, but a closer view of the subject soon discloses the fact that *one part* of the land is kept in high condition, either at the expense of *the rest*, or upon (chiefly South American) bones and guano. The "dung-producing system," however, is of all *the* one which can *longest* eke out the limited resources of the soil; and as the average population of Germany is far from dense in comparison to that of China or Japan, that system has been long in producing its inevitable ultimate effect of starving out the population. This, nevertheless, in many regions it *has* done. For it is the decreasing production of the soil which has not unfrequently compelled the emigration of entire villages, the owners of the soil relinquishing it at an almost nominal price to the large "economists," whose capital enabled them to purchase the imported fertilizers, without which profitable cultivation was henceforth impossible. These are *facts* easily verified by any one taking pains to investigate the matter. And as a prominent example of a region once densely populated and highly productive, which is now almost a waste, we may adduce the Roman Campagna—a tract of desolation which, since the times of the Roman Empire, it has not been found profitable to reclaim.

It is true that in some portions of Germany, Switzerland and Italy, as well as in thrifty Holland and Belgium, the regular circulation of the soil-ingredients, by the restoration of the night soil, resulting from the consumption of the soil products, is, in a measure, established; and the traveller and sojourner is made sensible of the fact by occasionally meeting a streak of horrible effluvia, as he traverses the fertile neighborhood of the towns, where peasants may be seen, accompanied by a hogshead, cart and huge dipper, flirting an indescribable liquid over the succulent turnips, beets or radishes, wherewith, a short time afterwards, he regales his customers. The "gulle" carts of Switzerland are not readily forgotten by any one who has resided in its cities.

Still, this is only a local, and even then partial practice, for the pernicious sewage and cesspool arrangements of most towns send the greater part of the soil-ingredients consumed either down to the sea or to the underlying water-bearing stratum, far beyond the reach of vegetation or recovery.

Not so in the veteran empires of China and Japan, whose dense population has, for ages past, compelled that strict economy in husbanding the resources of the soil which, with us of the West, is still the exception, while waste is the rule. You will find a most able exposition of the truly rational practice prevailing in Japan, in the report of a Prussian commission on the

subject, which I translated for the Memphis *Southern Farmer*, (see the numbers for June, August and September, 1867,) and which should be reprinted and widely distributed all over the country. It would exceed my present limits to enter into the details of the Japanese mode of culture, but it amounts essentially to this, that whenever a farmer carries produce for sale to a city, he scrupulously brings home with him an amount of manure corresponding to the products sold, (an item well understood by every tiller of the soil,) consisting mainly of human excrements, which are regularly collected by the inhabitants, and given in exchange or part payment for the necessaries of life. This manure is most carefully prepared and used in the hill or drill, and, in the almost entire absence of working and meat-producing stock, it is (apart from some compost prepared from miscellaneous offal) *the only manure used;* and no Japanese peasant dreams of making a crop without using a corresponding amount of manure, although, according to our ideas, his land may be in "high condition" all the time. His crops rarely fail, although he knows nothing about either rotation, green cropping, fallowing, or subsoiling, as understood with us. His soil is, from the outset, made as deep as practicable—three or four feet—and is apparently uniform from top to bottom; it is covered with an unbroken succession of crops throughout the growing season. And few families cultivate more than six acres!

Now these are sober, incontestable facts, and such is the most thoroughly "practical method" by which the fertility of the agricultural districts of China and Japan has been not only preserved, but increased, for a thousand years past. It is precisely the method to which all the investigations of modern science point as the only infallible one, as it involves a complete circulation of soil-ingredients, in which the organizing power of the soil plays exactly the part of the "interest-bearing power" of invested capital.

It is not flattering to our occidental self-conceit to compare this truly rational system of culture, and the ever-fertile fields of Japan, with the wasteful and improvident mode of procedure which has laid waste so much of the originally most fertile portions of the Old World, and is now marring the fair face of American landscapes with unsightly "old fields," waving with broom-sedge and scarred with red gullies, glaring in the sun. And this has happened, and is happening, in spite of hundreds of thousands of tons of manure annually imported, or manufactured from independent mineral sources.

As to the latter, they may go far towards making good the waste incurred by our present mode of disposing of the dead, which in China is beginning to be felt as a serious evil. But apart from the fact that phosphates are only a part of what is required for the maintenance of fertility, all the beds now known, or likely to be discovered, will weigh but lightly in the scale against a general demand, such as exists in Japan and China, and is daily becoming more pressing and difficult to satisfy in the Occident. Our commercial manures cost too much in the way of manipulation, transportation, and profits of intermediate agents, in proportion to their intrinsic value when applied to

land originally poor. It is owing to the *one-sided* wear of our soils, so to speak, and their still great natural store of plant-food, that we can realize such high profits on the exorbiant cost of the former; they act the part, in a great measure, of stimulants and complements. But whenever the want of manure shall be universally felt, (and this, it is to be hoped, will be the case before the temporary expedients of rotation, subsoiling, fallowing, liming and green-cropping shall have lost their efficacy,) it will become impossible for the small farmer to pay all these intermediate charges upon the bulk of the manure he uses; and least of all can he afford to pay for the crude ingredients in the manure, almost the same price which they bring him after being, by a season's labor, converted into crops. This is not uncommonly the case at the present time; and yet, farmers realize high profits on these shoddy fertilizers—not because they supplied the soil-ingredients required by the crop, but because, on account of the peculiar condition of the soil, they *just happened* to make up a deficiency, the existence of which was fatal to production.

This is an abnormal state of things, which will gradually cease to exist; but from it arise the enormously great differences in the effects produced by one and the same fertilizer on different soils, and the correspondingly great differences of opinion as to whether "commercial fertilizers will pay." The only answer to this ever-repeated question, that I know of, which is universally applicable, is that "it will assuredly *not* pay to cultivate a poor soil without manure."

But when, as is now the case in Japan, the crops to be reaped will correspond precisely to the amount of manure employed, the cost of the latter, as well as its composition, is necessarily confined within narrow limits. It will not then do to use *partial* manures, for the phosphate you put into the ground without a corresponding amount of potash, etc., to back it, will lie there as idle capital. It is *then* that the importance of having *complete* manures, like night soil or stable manure, becomes most obvious, and that the folly of paying for matter not immediately needed or available, phosphate though it be, becomes tangible to the dullest understanding. It matters little whether you use constitutionally inert "Orchilla guano," whose phosphates require years to become available; or whether you use an excess of *real* superphosphate, (not "*commercial*,") which, for a want of a complementary supply of the other soil-ingredients, fails to benefit you. In either case, your capital, which ought to be bearing you interest, lies dead in the ground for the time being.

With us, thanks to the freshness of our soils, (and I do not exclude from this category even the melancholy broom-sedge "old fields," which only lie dormant,) there is still in this matter a wide margin for profit and loss. And if, while this state of things lasts, we act wisely, and with due consideration for the well-being of future generations, we need never feel, even as much as we do at present, the want (*i. e.*, inadequacy,) of manure.

And this brings me to the last part of the subject, viz: "Suggesting some practical method by which the energetic Southern planter can prevent the

sterility, if not increase the fertility, of his farm or plantation;" and, in connection therewith, answering the question propounded concerning the ten-acre lot.

I might, were I disposed to be crusty and dogmatical, simply point you to the eminently and peculiarly *practical method* pursued by one-third of the population of the globe, in China and Japan, and say "go thou and do likewise!" For if there is anything but prejudice, ignorance and inertia on our part, to prevent its introduction, I "can't see it." And with our improved appliances and better knowledge of principles, we could greatly improve on it.

Yet this manner of disposing of the subject, though promulgated entirely from the chair of experience instead of that of science, would not be altogether practical. For, were it in our power to do away with the formidable obstacles just recited, with reference to other subjects as well as this, we should have found a short cut to the millennium. Which, judging by late events, in connection with the invention of the "mitrailleuse," is not yet quite close at hand.

Still, it is impossible to discuss the question mooted by you except with reference to the ultimate establishment, as soon as possible, of a system of agriculture which shall be similar, or substantially equivalent to that of a *perfect circulation of soil-ingredients*, as now practiced by our neighbors across the Pacific; which, so far as we can see at present, is the only one susceptible of being consistently carried out *ad infinitum*.

But, as regards the ten-acre lot, let us first of all fully understand the premises; though, as it stands, I might, in a loose way, answer emphatically in the negative, because ten acres is far more land than, if kept in fair condition, would feed a man and mule with its direct produce. There is, therefore, no adequate correlation between the product on the one hand and the manure produced on the other, since it would not take over half the presumable product, (350 bushels corn,) if so much, to feed the man and mule, although, doubtless, they might tend the whole ten, or more, if hard pushed. Their manure could not possibly represent more than the produce actually consumed by them, say from five acres of fair upland. If, in addition to this, they raise five bales of cotton on five more acres, these must be separately accounted for. For if an amount of manure, which would have rendered five acres fairly productive, be scattered over ten or twelve, its effect may become almost imperceptible for the time being.

Let us, then, consider the case of a *five* instead of a ten-acre lot, which is in Japan considered an ample allowance for even a large family, who perform the work, hereabouts allotted to the mule, by means of the hoe and spade. That *they do* keep their plot fertile by means of the manure produced at home, *plus* what they get in part exchange for their crop, is a fact about which there can be no argument. Query: Will the man and mule do the same, and if not, why not?

Much depends upon the previous condition of the soil. A soil *absolutely* poor,

containing substantially no available plant-food at all, cannot, under ordinary circumstances, be made profitably productive, for the reason that the presence of an amount of soil-ingredients sufficient for one full crop does not yet enable it to produce that crop. The presence of *not less* than four or five times that amount is requisite to ensure their absorption in sufficient quantity by the rootlets, which cannot, of course, come in contact with every atom of soil. Now, the introduction at once of a sufficient amount of manure into a totally barren soil, is too heavy an investment to pay, in view of the fact that, even with the most perfect tillage, only from one-fourth to one-sixth of it would bear interest, the rest lying idle. Clearly, then, if your man, mule and provisions for one year, and a year's manure to boot, were settled on five acres of such soil, the latter could not help improving a little, but it would yield, substantially, no crop; so that the second year man and mule would starve.

Suppose, however, that the five acres were *just within* the limits of productiveness, *i. e.*, capable of producing, unmanured, one fair crop, then your question implies whether the manure produced by man and mule, in the consumption of its product, would, if applied to the land, enable it to produce one more crop the succeeding year; and so on *ad infinitum*.

I answer, no; for it would be practicably impossible to so distribute the small amount of highly concentrated fertilizer as to be found by the growing crop at every individual point where it would be needed, so that no rootlet should find either a barren place or an injurious excess; nor, were this practicable, would every particle of your manure be likely to be found in an equally available condition at the time it is called for. True, you might manure in the hill, (which is under all points of view the most rational practice,) and thus greatly increase the chances of bringing about the absorption of your manure. But if you have ever tried to fulfil faithfully the requisite conditions, viz: a *really uniform* distribution of any fertilizer throughout the mass of soil normally penetrated by the roots of your crop, you will have found that nothing short of grinding both manure and soil to dust, and repeatedly sifting them together, could bring about such a practically unattainable state of things.

How, in fact, do we go about manuring? We haul out manure a year old (which we consider well "pulverized" when it contains no clods bigger than a walnut) in piles thirty to fifty feet apart. Behind comes a freedman and dashes a shovel half a dozen times into each pile, on pretense of "scattering" it; then comes a plough, harrow or cultivator, (unless our farmer should be an adherent of the "surface manuring" system,) and puts the clods a few inches under ground, where, should a drouth paralyze the upper roots for a time, the manure will be just as useful as though it were in—Guinea! Or, if in accordance with the views of many, we have thus put in the *unfermented* article, (for fear of losing what no farmer who knows his business will ever allow to escape from the manure pile,) the first root stretching out its delicate fingers in that direction will get them emphatically "burnt," not merely

by the heat of fermentation, but by the excessive accumulation of soluble salts which, were they evenly distributed instead of being in a lump, might have supplied the ingredients for half a dozen plants.

So long as we continue to practice this system, or anything resembling it in slovenliness, there is but one condition on which we can have "enough" manure by simply returning what the crops have withdrawn; and this condition is, that the supply of available plant-food in the soil shall be *so far ahead of the demand, that the modicum we annually return would scarcely be missed for several years*, so far as the fulness of the crops is concerned; and shall have time, in the natural course of things, to become thoroughly decomposed and uniformly diffused through the soil.

In other words, if the plot of ground on which you settle the man and mule be in high condition at the time, such as would enable us, under our present system of soil-pillage, to grow full crops, without return to the soil, for a dozen or a score of years; and if all its produce be consumed by the occupants, and their manure and offal scrupulously preserved and returned to the soil, whether broadcast, or what is always best, in the hill or drill; and if the tillage be good, and such as to reach *throughout* the soil stratum which contributes towards the support of crops, or is reached by their roots; then, not only science, but the experience of a thousand years on the part of one-third of the population of the globe, teaches that the fertility of the soil will not only be fully maintained, but increased, save as regards the phosphates which we "bury out of sight" with the bones of our dead.

But you cannot start your man and mule on a soil naturally poor or impoverished by mis-culture, and increase or even maintain its actual state of productiveness without first providing, by purchase or otherwise, a stock of available plant-food equivalent to that which would have been found laid up in a soil conditioned as above stated. This is no small matter, and the heavy outlay of capital which it necessitates is the penalty imposed by nature upon improvident culture, which necessitates ultimately the resuscitation of an exhausted soil.

But if, as you assume, your man and mule till not five but ten acres, or, with improved implements, fifteen or twenty, whether in cotton or provisions, then, of course, the soil-ingredients withdrawn from all land in excess of that which supports the man and mule must be separately replaced if fertility is to be maintained; and this replacement should, in the regular course of things, come from the points where the crops are consumed—the cities—which, though *we* may haul only cotton to their markets, will, of necessity, have supplied themselves with provisions from other sources. They should return to our fields not only the bones of the cattle they have consumed, but the contents of their sewers and privies, in an efficient, cheap and transportable form. So long as this remains undone the grain-producing regions will vainly strive to maintain, unimpaired, the productiveness of their soil. That this is not a utopy; that, on the contrary, a regular system of exchange in this matter is equally important and profitable to the dwellers in cities and

the tillers of the soil, and perfectly practicable with us as well as—or better than—in Japan or China, has already been proven in numerous experiments and enterprises on the large scale; and the introduction of the earth-closet is one of the most important steps lately achieved towards a rational system which will be equally important in a sanitary and in an agricultural point of view.

I am afraid, my dear sir, that by the time you have read to this point, appalled at the lengthy treatise your apparently simple question has evoked, you would willingly forego the "Article on Plantation Economy." I will not inflict it upon you at this time, but shall in another communication crave your indulgence while I adduce some additional considerations, with a view to the stimulating effect which you have missed in the perusal of my report.

EUG. W. HILGARD.

University of Mississippi, September, 1870.

The South and her Resources.

If the South was at this moment an empire, and alone, she would not be regarded as simply made up by what has been called "Plantation States;" nor would she be considered as dependant upon *either* of the two classes of labor, long known as "voluntary," or "involuntary." Her productions are not exclusive; they are *various* and valuable, and they are anxiously sought for by the rest of mankind. Let us take, for example, the small State in which we live. South Carolina exists by no *one* of *her* staples, but could be sustained if any single article were exterminated, or had never been known; *she* would still have a surplus, and for that surplus the world is her customer.

Nature has stamped upon her "*agricultural*," as properly indicating her purposes and her destiny; but a generous Nature has been bounteous to her in many other respects. It is always agreeable to speak of South Carolina as a portion only of the great and wealthy South; so let our reflections commence with that portion. If those reflections shall go beyond what is purely agricultural we may be excused, because *all* occupations must depend upon the *whole* character of the planet to which we are assigned, though chiefly, if not always, to the earth's cultivation, for our daily bread.

The soil, as I have said before, is more than equal to all our wants; and whether those wants are confined to sustenance only, or whether they extend to the most luxurious fancies of civilized society, or to the highest refinement of human intellect, the proposition is alike true. Draw upon the *soil*, with a proper endorsement of skilful husbandry, and the soil will answer to every demand. To this available soil the climate is peculiarly well adapted. Hitherto a system of labor has prevailed, marvellously suited to both; and that system, by a more genial name, is not beyond our reach at this very moment. In a land like ours the benefits accruing from agriculture, as a distinct science,

do not mean simply food and raiment; they mean, when properly examined, that the resources of the South, as an immense territory, have not been developed; they mean that *her* staples *have* clothed, and *are* clothing, the naked of other regions, and *have* fed, and *are* feeding the hungry all over the globe; and they further mean, that an *uninterrupted South* has the ability to do so again and again, till the ground refuses to give forth its annual return, and till the sun ceases to make *his* annual circuit. Indeed, how can those resources have been measured? For five years of mortal and unequal strife the South was passing through what our litany calls "agony and a bloody sweat;" and for five years *more* she has struggled in *darkness;* she has been threatened with anarchy, and has grappled with confusion. In such a contest she has warded off famine, pestilence and ruin. She has had no help but God's; she has had no sympathy save that which her money could pay for; she has had that kind of peace which the vanquished are sometimes permitted to enjoy; still the South has continued to *live*, and still she has a local habitation and a name. She has done so in the midst of her own communities, thoroughly demoralized with the strongest symptoms of a misgoverned and deluded population, running into licentiousness in the very face of law. Well, she has met these evils bravely, and, by enduring them, she is defeating them. And is such a country, or such a people, to be despaired of? If "Benledi's distant hill" *has* been "swathed as with a purple shroud," is there no light left? Has not the South gone patiently and wisely through every trial? Is there no bright vision indicating the destiny of our race?—and is there not a deep sentiment in our mother's bosom, manifesting that *she* has confidence in the courage, the energy, the industry of her children?

The effort making by an *outside* pressure to possess our country, gives some token that the country is worth possessing; and the mysterious, though constant, evidence of mercy, goes far to convince us that in the Divine Mind we are not forsaken. This individual would feel himself to be insignificant but for the consciousness of his own nativity; and South Carolina would cease to be recognized as a spot on the maps in her school-rooms, if she were not "part and parcel" of an honest, generous and fertile South.

The great American heart is not *entirely* insensible to our existence, or to our *condition.* We are *not universally* regarded as "standing in the way of civilization!" And may we, or shall we not again be made members of that powerful family which is rapidly absorbing this western hemisphere? Aye, why not? We live in an age when nothing is stationary. "Progress" is the word. The sea and the land are changing places; kingdoms are subverted in a week; new governments are created in a day—the work of many centuries are desecrated with a blow or obliterated by a breath. Vast armies are hurled upon each other to settle points of fictitious import. Masses of human beings rush upon their fate, and men are slaughtered by tens of thousands, as if crowned heads could *give* life, or ministers of State could barter it away as matter of pleasure or of pastime! And in such times as

these, is the South no part of creation? Let us look backwards or forwards and the contrary will appear.

The writer well remembers when cotton was scarcely an article of commercial export; and he has lived to see the day when the hand of God, always providing relief for our necessities, and ever contributing to our comfort, has suddenly revealed what this *great staple* mostly needed. The discovery of phosphates renders the exhausting of our lands utterly impossible; and as steam and electricity have made distant corners of the earth our *neighbors*, and, we hope, our *friends*, so phosphates will enable us to make the *decay* of *their* soil a grievance no longer to be apprehended. May we not look for a revival of those blessed precepts which nearly nineteen hundred years ago taught man to love his neighbor like himself?

But when we talk of cotton and of phosphate, have we done more than tap this colossal subject, the influence of which is not yet comprehended? Where is tobacco? where is sugar? where is hemp? where is rice? Indian corn and wheat? Where are rye, barley, and every other grain? Where are beef, bacon, and pork? Let the "*low grounds*" of the South answer in a voice of grateful triumph, and let her hill-sides give back an echo in all the tranquillity of conscious power.

One word more as to phosphates, only to show those who may "run and read" that the Almighty is on our side to render this *hitherto hidden treasure* especially valuable for certain purposes: a preparation of sulphuric acid is essentially necessary; sulphur had to be imported from other regions, and those regions are limited in extent. Now let us pause for a moment and contemplate *that* "mercy which endureth forever!" Our uplands were beginning to fail just when it became most difficult to procure labor for clearing new grounds. We were importing guano from the remotest points, and our means had vanished under the outlay of a terrible revolution! But a guardian angel sat upon the watch tower, and *that* angel spoke: "Phosphates were found in all the rivers of the State in quantities to meet any demand." Sulphur seemed to be our only want, and immediately the Southern mind was directed where to find it. Immense beds are discovered in the West; and in the midst of doubt, discomfiture and dismay, the mysterious hand points out the road that leads us to the temple where riches await those who have energy and courage to deserve them.

All this seems to prove that agriculture is the great developing cause of what ought to constitute the prosperity of our country; but the plough and the loom are equally connected in *that* cause. Those fabrics which often make the return cargo from the spinning-jennies of Europe can surely be produced *here* where the raw material so abounds; where "water-power" costs nothing; where the forest provides forage for that "iron horse," whose labors give covering to the poor, ornament to the rich, and food to the universe—and such is steam.

Give the South a fair chance, and if she does not successfully compete with

the strongest of those who now live and move and have their being upon the footstool of the Creator, then the human mind is paralyzed; then arithmetic no longer shows what numbers mean; then is the record of Madame De Staël fully made out, for if "two and two do not make four," all algebra falls to the ground.

ALFRED HUGER.

Plantation Economy.

If laxity of habit ever was the prevailing characteristic of any people, it certainly must have been, and is yet, of Southern planters, and especially that class known as cotton planters. With little system and less method, we set out in January to make a crop, and struggle on through a twelvemonth, encountering this obstacle and surviving that disaster, reaping an abundant harvest here, and incurring heavy losses there, until finally the crop is housed, and perhaps sold, and not one in a hundred of the proprietors can give even an approximate estimate of what it has cost him. Indeed, such a thing as opening an account current with the plantation or farm, and treating each field as a creditor or debtor, is seldom if ever heard of. Who amongst our planting readers can answer promptly the inquiry: What is the amount of your agricultural investment? And how many less can, by calculation and reflection, accurately assert what it cost them to grow a bale of cotton, or a bushel of corn, or to raise a cow, or a hog? And, above all, who can say what the wear and tear of his plantation is?

Very few planters are sufficiently versed in figures and practical economy to be able to tell the total cost of building a simple worm fence. Forest lands are deprived of rail timber, and no estimate made whether the land is injured or benefited, depreciated or enhanced in value, by clearing. The hauling is done, and no specific cost attached to time and labor. The fence is built around the field regardless of shape of field or width of worm, or value of land occupied by the fence; all that is asked is that the crop be enclosed.

Apart from these minor items of expense on the farm, what have our planters to say concerning the weightier matters, such as the subsistence of the family, and rearing and educating their children? Of such an expense absolutely no account is ever kept. If one buys a mule he well knows the amount of money spent, and no questions are asked as to the profit or loss to the drover. If the same planter sells a bale of cotton, he seems, in this instance, as regardless as in the other of his own profit and loss in the growing and selling, provided he gets the market price. There is, however, a vital difference between these two transactions. The drover, if a breeder, sets a price upon his stock, because he knows from long experience, if not from individual calculation, what it costs to grow a mule for market; if a purchaser and not a breeder, he is a mule broker, and has added a liberal percentage, and hence knows his profits; his price is demanded and received. In the other transaction the planter enters the market, and instead of

demanding a price, asks humbly, "What are you paying for cotton?" and thus allows others to price his own wares.

The merchant, too, looks over his invoice, learns what each article costs him, adds a percentage for profit, always leaving a margin to cover unsalable stock, and marks the price he intends receiving. Not so with the planter. He has no invoice; he knows nothing of prime cost; he has forgotten the toils and labors of the past heated summer, when grass and noxious weeds well night lost him a crop, and is now only anxious to get the highest price already set by others upon the products of his own time and energy. This expensive, ruinous, and lamentable condition of Southern plantation economy is the result of many causes, not the least of which is wilful ignorance.

Knowing less of the science of agriculture than would enable them to apply the art successfully, many planters have never conceived the idea that they should keep an account current for and against themselves on the plantation. The intrinsic worth of their products is seldom if ever estimated. Did the cotton planter know exactly what it cost him to plant, cultivate and harvest his crop, he would, like the drover or merchant, set his own price, and not allow outsiders to set it for him. If, then, it cost him more than he could get for it, he would certainly cease planting cotton, and cast about for another more remunerative article of produce.

When cotton goes down the hue and cry is immediately sounded, "We plant too much cotton," and yet believing it costs less to raise a dollar's worth of cotton than it does the same worth of anything else, we seldom curtail the area planted because of the low price. Indeed, since 1865 the price does not seem to have been regulated by the supply, nor do the demand and supply influence each other. The crop of 1866 was 2,000,000 bales, and sold at a remunerative price; the crop of 1867 was only about 500,000 bales more, and every one remembers that cotton ranged that winter as low as ten cents per pound. The crops of 1868 and 1869 were both larger than that of 1867, and the price was remunerative through both years. It was speculation that set the price upon the crop in 1867, and this same vampire will always appropriate to itself the net earnings of a cotton crop, until the planter educates himself sufficiently in book-keeping to know exactly what it cost him to raise a bale of cotton.

Cotton planters as a class are imitative creatures, most of them plant cotton because their neighbors over the creek plant it, and seldom make the inquiry, "Whether it would pay me better to plant corn or cotton, small grain or potatoes?" Living on in this unsatisfactory, unsystematic manner, from year to year, keeping no inventory or record of receipts or expenditures, and never "trading stock," as the merchants say, not one in a score of Southern cotton planters can tell from net cash in hand, or from enhanced value of property, whether his investment has been a profitable one; in a word, whether he has made or lost money by planting since the war.

We frequently see estimates made on paper of the comparative net profits of Northern and Southern farming, and as often as calculated the compari-

son is made quite a contrast in favor of the Northern farmer. While I think this result questionable, it must be admitted that the Northern farmer is so much more systematic than the Southern, that he can much more accurately report annually whether there is a profit or loss in his agricultural investment. For instance, the returns made to the Agricultural Department at Washington, from Massachusetts, report the number of rods of fencing in the whole State, the prime cost of building, and the annual expense of repairing. What Southern planter, much less a County or State, knows as much concerning the fencing on his own plantation? But few Northern farmers make net money by growing crops. Investing in land, their first endeavor is to enhance its value annually. This system enables them to accumulate vast quantities of manure; their proverbial frugality induces them to save everything; their industry and tact assists them in improving the soil as well as their premises. And thus, while they are earning a living by their labors, they are annually growing richer, because their investment is gradually being enhanced in value. Their crops, too, are well cultivated by labor paid for in money, and hence their expenses are easily kept. With Southern cotton planters all these things are just the reverse. Instead of setting about systematically to enrich his land, he exacts from it annually a heavy percentage of its original fertility; instead of making manure he uses none but what he buys; for frugality he often substitutes extravagance, and very rarely improves any part of his premises but his gin-house or cotton press. And before the crop is "pitched" a sort of bastard copartnership is formed between intelligence and ignorance, capital and labor, in which the two pull together like baulky horses all the year round, and when the day of settlement arrives capital has been exhausted, the laborer is still in rags, and the planter is in a sort of politico-economical mist that disables him from reckoning whether he has made or lost by the labors of the year.

Such a condition of things could be easily obviated by adopting the system of making a daily record of the events of the farm. Planters' Account Books are published purposely to this end. Before the war Affleck's Farm Book was so suggestive, so accurate and so comprehensive, that the farmer had only to devote a few minutes to its pages, at the close of every day, to be able to tell on each succeeding January the comparative value of his investment with any previous January. A similar work, adapted to the new order of things at the South, is now needed. It should contain a simple and comprehensive compendium of general farm information; an inventory with prices attached of all the land, implements, stock, and any articles of value on the farm; a cash account with the laborers and the plantation; time table for every day in the year; memoranda for current remarks, and other suggestions, by means of which the planter can know accurately whether he is annually making or losing by his system of planting. Investment in such a book is money well spent.

D. WYATT AIKEN.

How to Utilize Forest Leaves.

In reply to S. B., and others, I offer the following hints for utilizing forest leaves:

Gather up the leaves and surface mold into heaps with weeding hoes, and let them lie some months before hauling for the leaves to rot. Do this at any spare time you can command during the year. When well rotted put one hundred one-horse loads to the acre, and turn under. Then broadcast forty bushels of lime, or one hundred and fifty of marl, and harrow in.

Or else rake off the loose leaves in the woods and use them as bedding in the stable, or in the cow or hog-pen; and scrape up the surface mold alone, using it at once upon your land. Forest mold, if well rotted, is an excellent manure, and, in conjunction with lime or marl, affords one of the readiest means of improving old lands. I do not favor the use of coarse litter, such as forest leaves, with growing crops.

If you wish to improve a piece of poor land, and can afford to wait a year, it would be a good plan to get up the leaves and mold altogether, and put at once upon the land and turn under. Then put the above quantity of marl, or lime, with two bushels of Southern field pea and one of salt, to the acre, and harrow in. It is a good plan also to use what leaves you can in littering stables, cow-pens, etc. They make a clean warm bed for all stock, and add very much to the bulk of the manure heap. Stables should be cleaned out at least once a week, and a load of leaves put in each stall; and the pig-pen, especially at fatting time, should receive constant additions. And here is just where you may make the most of your leaves. Set your hogs to composting them. Mr. Piggy is the greatest compost maker in creation. Keep your pens well supplied, and give your hogs a chance to root. Scrape up the leaves and mold altogether, with any rotten logs you may find, and throw over to Mr. Pig. Put in ashes occasionally, and marl. You will be surprised to see how soon all will be thoroughly mixed and mingled together, into one of the very best manures. Twenty hogs, if kept in the pen all the year, will thus "use up" all the leaves that S. B., or any one, will find time to haul, unless he keeps a hand and team for this special service. And twenty hogs will thus pay their board until fatting time. How much better it would be to make the hogs pay board, by making manure, than to have their own manure lost along the roadside, or at the farm gate.

There are other ways of putting the leaves to use, such as making shelter for stock in winter, spreading on hill-sides and gullies to prevent washing, mulching, etc., etc.. But I would not occupy, with my poor article, too much space in this valuable journal, and will close.

I cannot do so, however, without noticing some strictures, by "D. W. A.," in September number, in relation to forest leaves. He says, "Composting the leaves from the forest to enrich a field is, to say the least, robbing Peter to pay Paul. The injurious effects of hauling bulky material over arable land

s never paid for by the enriching properties of the compost." With all due respect, to "D. W. A.," I would suggest that the compost be hauled when the ground is frozen; and would ask *why* getting the leaves from the woods to improve land is robbing Peter, or anybody else, to pay Paul?

Cottage Home, Surry, Va. B. W. JONES.

What is Rust in Wheat?

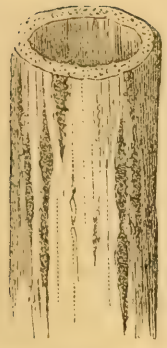


Fig. 1. — Magnified Wheat Straw marked with rust.

Fig. 2.—Magnified Rust Plants attached to the Straw.

It is a small, microscopic plant or fungus, the seeds of which are distributed through the sap pores. These seeds produce young plants under the epidermis or skin of the wheat—which they swell and burst in longitudinal slits all over the plant. These little plants may be distinctly seen by means of a powerful microscope, in all stages of their development—from the numerous little round regular heads, seen beneath the transparent and unbroken epidermis, to the confused mass after they have broken through and scattered their fine powder over the whole surface. In favorable weather, and in good wheat fields, rust makes but little progress, and does little or no harm; but when the weather suddenly becomes hot and moist, its attacks are often fatal to the crop. The growth of the grain is at once arrested, and if the crop is struck before the grain has formed, it will not be worth cutting. If partly formed it will be more or less injured. Wheat growing on low, wet and mucky soil is generally more liable to rust than on hard upland, but cases not unfrequently occur when it appears in belts or streaks, in the direction of prevailing winds, blighting alike every field of wheat, whether high or low, in its track. The remedy for rust is sowing on dry or well drained soil, which is rich enough to push the crop on and cause it to ripen early, beyond the reach of its attacks. Early ripening varieties are best on this account.—*Annual Register of Rural Affairs.*

Fig. 3.—Highly Magnified Rust Plant.

To a "Constant Reader."

My dear sir, if you were not from "Old Rip," I'd think you were poking fun at me; but as you are allowed by common consent to indulge in drowsy slumbers, I will suppose you were suddenly aroused from a heavy nightmare when you expressed yourself mystified at my saying the "old-fashioned wooden plough," etc. were the negro's best arms for plantation work. Per-

haps I should have said wooden plough *stock;* but never *dreaming* myself that any one could have supposed I meant other than the old-fashioned wooden plough stock, made by every man who runs a plough, I was not sufficiently explicit in the use of words. Will say in future exactly what I mean, or try to do so.

There is, however, no more opportune time to discuss ploughs, plough stocks and ploughing than the present, and I would here venture a few remarks for the benefit of "Constant Reader," as well as for the "rest of mankind," every one of whom should be constant readers of THE RURAL.

The South seems run mad on subsoiling, and many, very many planters seem to think this operation the panacea for all the ailments of the soil. And the impliments by which many men perform the operation are considered perfect; not one of which, however, have ever I seen that is entitled to any peculiar credit. The Murfee seems to have surpassed all others in popularity, and yet it will not bear severe criticism. The one-horse Murfee is too heavy for one and too light for two. In stiff land one horse can do but little with it, and a heavy span will break the wedge-shaped points as fast as you put them on. My judgment is, these points, from their peculiar shape, peel up the land and compress it upwards to such an extent, that if the land receive a heavy rain just after being subsoiled, it will run together more compactly than before it was ploughed.

The best subsoil plough I have ever used was the fork of a post-oak trimmed down to the proper size, one of the limbs of the fork sawed off at the desired angle to act as a brace to the scooter, let down through a mortice in the other prong of the fork. This scooter, or coulter, or subsoil plough was made of five-eight tire iron turned edgewise, flattened at the point, and keyed to a proper length or depth by a latteral pin through the mortice and hole in the iron. Any practical planter can make one of these that will do satisfactory work at about one-third the cost of a patented plough, and it will last till it wears out; no chance to break it.

But, having the subsoil plough, when and for what purpose should it be used? From the 1st of November till middle of February will be the only time a cotton planter will be enabled to use the subsoil plough, and he should use it anywhere and everywhere except in a sand bank. Clay lands are made more porous, and flinty lands are disintegrated by subsoiling, and in both cases evaporation is promoted, and capillary attraction increased; and the lighter gases with moisture from below, and the heavier gases from above commingling in the soil superinduces chemical changes that produce fertility of soil. To what depth this operation should be carried in sandy land to produce similar effects, those who have tried it must say. I never have.

Whether in addition to this chemical action upon the constituents of the soil, the effect of winter subsoiling is to enable plants to withstand more effectually the drouths of the following summer, to my mind is very doubtful. I have subsoiled land in March that was as hard as bone by May; and again, I have thought I could see the effects in July of the subsoiling the pre-

vious November. Many circumstances accompany and influence all such farm operations, which if noted carefully at the time and correctly reported would read valuable lessons to observant planters. The condition of the land whether wet or dry; the quality of the soil, whether clay or gravel, sterile or fertile; the subsequent weather, whether heavy or light rains, and many other circumstances have much to do with the effects of subsoiling. But enough. D. W. A.

Texas Grasses.

[The interest now felt in the cultivation of the grasses in the South, and the many inquiries we have received in regard to the best species for our climate, induced us to request Professor S. B. Buckley, who knows more about them than any other man, to give us brief descriptions of some of the best of the Texan species. Our readers will join us in thanking him for his kind compliance with our wishes. The subject will be continued in future articles.—Ed.]

The old cotton-growing Southern States have now comparatively few good native grasses. Texas, on the contrary, especially the prairies of the middle and western part of the State, abound in a great variety of nutritious grasses, which, when not overstocked, keep horses, cattle and sheep in good condition the entire year, thus giving very little expense to the stock-raisers in those regions. The only difficulty is that these prairies are sometimes overstocked, and thus more or less of the older and feebler animals perish during the cold storms of winter.

The *Panicum*, which you received from a gentleman at Austin, is probably the *P. Texanum*, (Buckley,) of which I first published a description in my Preliminary Report of the Geological and Agricultural Survey of Texas, in 1866, in the Appendix, page 3. The following is its botanical description:

Culms erect or subdecumbent terete, smooth; sheaths shorter than the internodes, subpubescent, and at their mouths hairy; upper portion of the internodes and joints pubescent; leaves six to ten inches long and eight to ten lines broad, long accuminate, under surface subpubescent; panicle compressed, five to eight inches long and five to seven inches broad; rays alternate, erect, lower glume ovate, acute, one-half shorter than the floret, five-nerved; upper one seven-nerved, acute, hyaline, between the nerves subpubescent, longer than and covering the floret. Several stems often grow from the same root, stems sparingly branched, seeds numerous and aggregated.

Common in the vicinity of Austin, Texas, where it is often cut for hay, for which it is highly esteemed, because it is relished and eaten eagerly by both horses and cattle. It grows thick and very rapidly, one or two months being sufficient to bring it to maturity enough for hay. It should be cut before its seed is fully ripe. It is said that it will yield sometimes two tons to the acre. Here it is generally permitted to grow in the corn fields, where it springs up in June after the corn is laid by. It is of sufficient maturity to be cut from

the middle to the last of August. The corn is often gathered, the stalks pulled, and then the grass is cut with a machine. It thrives best on the Colorado bottom lands, yet I have seen it growing on poor upland soil, but it was dwarfed at least one-half.

It spreads very rapidly. Those who have a suitable soil can easily propagate it by scattering a few of its seeds in a corn field. It is an annual, hence I do not think it will be hard for those to eradicate who do not wish to continue its cultivation.

S. B. BUCKLEY.

Austin, Texas, September 27, 1870.

Prickly Pear or Cactus.

In an article in your September number, entitled "Experience in Hedging," Mr. P. T. Graves, of Manack, Alabama, recommends the prickly pear, and points out several qualities of advantage possessed by it above all other hedge plants with which he has experimented for that purpose, also praises the plant "for its fruit, as being nutritious and healthful for making sweet pickles, syrup, vinegar, and also using it as a dye." Allow me to mention some other good and valuable qualities of that plant, which came under my observation while serving on the Rio Grande frontier, where the prickly pear abounds, some years ago, before the "little unpleasantness between the States."

A great deal of the wagoning in that section of the country is done with ox teams, and at certain seasons of the year water is so scarce that it is difficult to obtain it for those teams; and under such circumstances I have often seen the Mexican teamsters, as most of them are, cut a quantity of prickly pear with an old sabre which they carry for that purpose, a pile which would fill a flour barrel, for each yoke of oxen, then hold each bunch into a blazing fire long enough to burn off the thorns or pricks, when they are thrown to the eager animals, which seem to be awaiting this provision with as much anxiety as our cattle do at feed time, when they hear fodder rattling, or see it coming to them. The prickly pear, thus prepared, answers their teams for both food and drink, and they apparently relish it very much; they are revived and enabled to continue their journey, day after day, over those long, arid prairies without water, and without losing much in flesh, none, in fact, unless driven very hard. Those Mexican teamsters, a stranger might think were improvident wretches, to see them camp of an evening, after a long and dry day's drive of their teams, within fifty or a hundred yards of a watercourse, and not take their stock to water. But they know the wants of their animals thoroughly, and as soon as they unyoke them a fire is kindled, which the cattle well understand, and the old sabre is handled for the purpose of cutting a supply of their prickly forage, which is then quickly singed to render it more acceptable to the kine, and then his portion is tossed to each, and greedily eaten. They will go to each others pile after finishing

their own, in the same way they do for corn, fodder, or other agreeable provender.

This plant is very succulent, and when masticating it these thirsty animals elevate their nozzles for the purpose, apparently, of saving all of the mucous-like juice, but in spite of their efforts to prevent it, the juice pours in great quantities from their mouths to the ground. A party of Mexican (ox) teamsters would be about the only ones that might be likely, were they unrestrained, to breach a prickly pear hedge. Cattle eat them sometimes when other food is scarce, on that frontier during the latter part of winter, or when the grass has been burnt off, as is frequently the case, they subsist almost entirely on the prickly pear. At Ringgold barracks, Forts McIntosh, Duncan and others, I have often seen soldiers refuse to eat the beef tongues on account of the callous and ugly condition of their surfaces, rendered so by the thorns of the prickly pears they had eaten from the prairies while growing.

Often when on scouts and marches on that frontier, we found the prickly pear of great benefit in clarifying the muddy water which we otherwise would have been compelled to drink. We singed the thorns off as the Mexicans do for their oxen, and split the leaf (as it may be called) open, then put them into the vessel of muddy water, allowing it to remain quiet, and in a short time the clear water may be poured off, leaving the muddy residue. The clear water partakes of no unpleasant taste from the prickly pear.

The Mexicans, besides using the fruit of this plant largely, also use the tender sprouts early in spring time for food (as greens.) Those tender sprouts, leaflets or buds, have no thorns, and they are very palatable when fried with eggs, a favorite dish in that country in its season.

I have no doubt the fibres of this plant would make paper, if the other parts could be rotted out or separated from them economically.

Chaudemont Farm, near Rome, Ga. DR. WM. A. C.

The Cactus Hedge.

I notice an article in the September number of THE RURAL CAROLINIAN, by P. T. Graves, of Alabama, on the subject of hedges, in which he recommends what he calls the *Palm Cactus;* I have no doubt but that it is the same that I procured a year or two ago from one of the islands on the Georgia coast. Whether it was a native of that section, or whether it was imported, I cannot say, though I am inclined to believe that it was imported. I brought one of the plants here—a young one only about three feet high. During the transportation several of the lobes were broken off. Those I planted also, and they all did so well that I was thinking seriously of getting more for hedges, but about June or July, I noticed several lobes turn yellow, and finally dry up and drop off; many of the cuttings died in the same way. This went on for some time, and I was in a fair way to lose all, when I acci-

dentally discovered the cause. I found that a caterpillar, almost exactly like the ordinary cotton caterpillar, had bored a small hole through the outer skin, and laid its eggs *in* the lobe. These had hatched, and by getting the plant between the sun and myself I could distinctly see the caterpillars through the skin of the lobes, there being as many as four or six in each affected lobe. Some of the lobes were mere shells and were dropping off, while others were only partly eaten. In every case the shape of the lobe was perfect, and there was no apparent external cause for its death, except the small hole in one side, and that was covered with the gum that had run out and hardened over it. Those lobes that were only partially eaten, I saved by cutting out the caterpillars. Now this plant may make a desirable hedge in some respects, but it certainly will not withstand the attacks of the caterpillar; and, moreover, would it not be rather dangerous to surround a cotton field, for instance, with a plant that harbors, protects, and fattens such dangerous enemies as this does? P. R. FLUNKS.

Beaufort County, S. C., September 1st, 1870.

Old Field Experience.

In 1867 I fenced in one and a quarter acres *poor old field*, broke up very shallow, and planted in corn and sweet potatoes—the latter lightly manured in drill with stable manure. There was a poor yield of corn, the stalks being cut for feed. The potatoes gave pretty fair yield.

In 1868 I planted the lot in sweet and Irish potatoes after ploughing a little deeper. Housed one hundred bushels of sweet potatoes late in November. Only three rods square were planted in Irish potatoes, which produced a little upwards of fifty bushels. The sweet potatoes were manured lightly with stable manure. The Irish were manured heavily with stable manure, a little Peruvian guano and charcoal. After covering with a plough the potatoes were allowed to come up, and then the patch was mulched with oak leaves. The hogs were allowed the use of the lot for two weeks, a light dropping with stable manure was given, and on 23d December the whole was sown in wheat—variety, the blue straw, one bushel and a half. I cut and put up sixty-seven dozen on 17th June, 1869; and thrashed out thirty bushels.

The lot was then sown in peas, but the drouth prevented them from doing any good. About 1st November, 1867, I broke the land ten inches, broadcast stable and barn-yard manure, and on 25th same month sowed and ploughed in, with small scooter plough, one and a half bushels of same variety of wheat as in previous year. On 15th June, 1870, cut and put up sixty-six dozen, which threshed out thirty-one and a half bushels of nice clean wheat. Now, as this last crop was manured more heavily than the crop of previous year, I expected a much larger yield, which you see was very nearly the same, being but a little more. Was it (perhaps) a difference in the season, or the *following after* of the same crop, that prevented a greater yield?

I would here say that the weight was, in 1869, sixty-three pounds per bushel —in 1870, sixty-four and a half pounds per bushel. The lot is now in corn, peas, sweet potatoes and turnips.

Now, I desire to plant the lot in *onions*, for the next crop. I would be very glad to receive any information in regard to the planting, cultivation and preservation or housing of the crop. Also, whether the crop will pay, and how much?

It appears to me that the farming interest of the upper portion of the State, at least, demands a greater diversity of crops—the tobacco plant, the Irish potato, the onion, etc., might be made to pay more, as surplus crops, than cotton, in the upper counties. GILES L. GLAZENERD, M. D.

George's Creek, Pickens Co., S. C.

A Cheap Underdrain.

There are few farms in the South—perhaps not one—some part of which would not be benefited by underdraining. But as eight-tenths of us are not able to bear the heavy cost of tile-drains, some cheaper mode of reaching the same end must be resorted to, or much of our land must remain comparatively useless to us. Happily this need not be the case. A very good, efficient, and cheap drain may be constructed thus: Mark off the line of your ditch and open as deep as you can with a turn-plough, throwing the dirt outwards. This will save much hand-work with the spade. Now open your ditch with a spade to any depth and size you may desire. Then place sapling pine (or other) poles that are straight down in the ditch, in such a way that the third one will rest close upon the first two thus $_{o}{}^{o}{}_{o}$, leaving an open space underneath for the passage of the water. Or if you want a large drain, place five poles down thus $_{o}{}^{o}{}_{o}{}^{o}{}_{o}$. Cover these poles with pine-tags or leaves from the woods and tramp them down. (Everybody in the South has an old field, so plenty of the above material.) Fill up the remainder of the ditch with the dirt thrown out and your work is done. This drain will last fifteen or twenty years. It would be well to cut poles and haul them beforehand so as not to delay the work. The leaves too, might be got up and hauled, placing them along the line of the ditch.

Cottage Home, Surry, Va. B. W. JONES.

Agricultural Miscellany.

NO MIDDLE FURROW IN PLOUGHING.

A writer in the *Germantown Telegraph* describes the manner in which a field may be ploughed so as to have no middle furrows:

First measure across one end, and in exactly half way across set a stake tall enough to be seen across the field from the other end. Then proceed to the other end and there find the centre by careful measurement, and here

with stake in hand proceed toward the first stake set, until the distance from the end shall equal half the diameter as just measured, and there set the stake. Then go to the first stake set and carry it toward the last one a distance equal to one-half the diameter of that end of the field; there set it. Should one end be wider than the other, the wide end should have two stakes put in such position that each of the three will be equidistant from the outside. Then back-furrow from each corner of the field directly to the nearest stake. Then commence and "gee" around from one stake to another.

The ridge formed by the back-furrows, as above mentioned, can be turned on at the corners, and leaves no baulks and saves driving. There may be one short middle furrow to "haw" out in the centre, but that can be avoided. This method saves making such ridges as are often seen next the fence.

THE EFFECT OF TREES ON THE RAIN-FALL.

It is stated as one of the effects of the construction of the Suez Canal that in the adjacent deserts, where a drop of rain was never known to fall, showers are now not unfrequent, and heavy fogs prevail. These climatic changes are attributed to the number of trees planted along the canal, and the shrubbery in the villages which have sprung up at every station along the great water course. The lesson is not without its value to us. If our people desire to avoid drouth or excessive floods, and preserve a moist and equal climate, they must not strip the country of its foliage. It is the interest of farmers to plant trees. They beautify the landscape, offer grateful shade and preserve the moisture of the atmosphere.

BRAINS IN FARMING.

In a recent essay read before a farmers' club in New England, this sentence occurs:

"Probably one-fourth of all the manures and other fertilizers used on the farms of New England are spent in the production of some other than the desired crop."

We presume the writer had reference to the growth of weeds and foul grasses which would be equally awakened into vigorous life by the enriching material which was intended for the wheat instead of the tares.

But more than this is true. Certain fertilizers are appropriate to certain soils and to the growth of certain plants, and when misapplied they are measurably lost. A good agricultural journal carefully read will correct all this and save ten times its subscription price each year by stopping leaks that the unknowing and unthinking farmer had never seen or even thought of.

MARL AND MUCK.

The experiments of Edmund Ruffin and others demonstrate the great value of calcareous marl as an ameliorator of our soils. Most of our lands are deficient in lime, and nature has kindly placed within our reach these means by which the defect may be supplied. But again all soils require vegetable matter that they may fully perform their functions. The muck of our swamps supplies not only vegetable matter but a considerable amount of those valuable fertilizing materials which we purchase at a high price, in a more concentrated form, under the name of guanos and superphosphate. Muck and marl

are generally found near each other, and should be used in connection whenever it is convenient. A compost made up of those materials, enriched by a small amount of excrementitious manure is a good fertilizer for all crops.

CORKWOOD CULTURE IN SPAIN.

The annual crop of corkwood in the province of Girona, in Catalonia, is twelve and a half millions of pounds. The manufacture of corks is an industry which offers an element of great importance and a source of wealth to the inhabitants of that country; but the people are not satisfied with that quantity, and to cover the wants of the manufacturers, which is 142,000,000 of the raw corkwood, three millions of pounds have to be imported from Andalusia, Estramadura, and from the district of Arenys de Mar, in the province of Barcelona.

The cork-oak (*Quercus suber*) grows finely in the Southern States, and could no doubt be cultivated with profit.

Department of Horticulture and Rural Art.

Southern Fruits.—Peaches.

Size, medium, slightly oblong; skin, greenish white, with a slight red cheek; flesh, white, juicy, vinous; in texture and appearance resembling serrated early York, but ripening beginning of November; flowers, large; quality, variable, sometimes best, at other seasons only second-rate; this quality is modified by warm or cold weather in October. In 1859, when first brought to notice, on November 15th, its quality was best. This variety is one of the very latest of good quality, and with it ends the peach season, which, commencing here in the first week in June, with Hale's Early, gives us upwards of five months in which this delicious fruit can be had. Originated at Aiken, S. C., by the late Mrs. Julia Dupré.

Fruit, large, to very large, nearly globular, sides somewhat compressed; skin, rather downy, creamy white, shaded and beautifully washed and marbled with deep carmine and quite distinct in its delicate pencilings from any other variety; flesh, white, with deep crimson near the stone; very juicy, melting, with a rich vinous flavor; cling; quality, best; season of maturity, from July 15th to end of the month; flowers, very large, pale pink; glands, reniform. The tree is an open grower, and requires severe shortening in until well formed. The foliage is large, deep green, and very luxuriant. This admirable peach was first disseminated South by the late Henry Lyons, Esq., of Columbia, S. C. It is one of the largest and finest clingstone in cultivation, as well as one of the very earliest.

It is very prolific, and the fruit is always of uniform size, commanding thereby the highest market prices. It stands shipping to Northern markets quite well, but its quality is injured by being picked before it is fully ripe, and therefore it cannot be classed among the desirable shipping varieties.

As a rule, which holds out for all the clingstone peaches, these varieties should never be picked until they are almost ripe. If picked for shipping to distant markets, in such a stage of immaturity as will enable them to stand carriage, they almost always shrivel and become leathery, and never attain that degree of perfection as when left on the tree until quite ripe. A clingstone peach is therefore a fruit for home consumption. It is by sending immature specimens North that an opinion has been formed there that clingstones are all very inferior, and a really otherwise most meritorous fruit classed as worthless.

P. J. BERCKMANS.

Augusta, Ga.

How to Prune a Peach Tree.

Fig. 1.

The peach tree, as usually seen in our yards and gardens, is about as unsightly an object as such a tree can well be; but there is no fruit tree susceptible of being made a more shapely and elegant. It don't seem capable of taking care of itself in this particular, like the cherry or the persimmon, but grows up with a crooked, twisted stem, and an unbalanced, sprawling head. Fig. 1 is a much too favorable representation of a peach tree left to itself. If represented leaning at an angle of forty-five degrees, and with one side broken off, the portrait would be more truthful.

A little care in training and pruning (supposing you have a good, healthy young tree to commence with) will remedy all this, and make the peach tree an ornamental as well as a useful one, its foliage being very beautiful.

The trees, as you buy them, or take them from your nursery, should be from four to six feet in height, with numerous branches, the lowest from a foot and a half to two feet from the crown of the root. The first thing to be done is to cut off all the branches within a quarter of an inch of the main stem, which must be headed back to from two and a half to three and a half feet in length. This stump will give you a better head than you can get by merely shortening the branches to from one-half to one-fourth of their original length, as generally recommended, there being latent buds in the axil of each branch from which new shoots will be thrown out.

Fig. 2.

At the next pruning, which may take place any time from August to January, but the earlier the better, the process is to clip off from one-half to two-thirds of the season's growth all over the tree; but in pruning a tree, as in everything else, there is a right and a wrong way, and the wrong way is worse than no pruning at all. *Cut to a bud on the outer side of the stem.* This is the general rule, and it will give you, when the next growth starts, a prolongation outwardly, prevent the tree from becoming crowded in the centre, and ensure, in most cases, a symmetrical head. In exceptional cases, where a vacant space requires to be filled, you may cut to a side bud, and thus throw a branch in that direction. Fig. 2 shows a large peach tree which has been properly pruned. This shortening in process should be continued, with such modifications as the nature of the case will suggest, for many years.

The Guava (Psidium pyriferum.)

The Guava is a West Indian shrub or tree, growing to the height of from seven to twelve feet, with numerous branches. The flowers are sweet smelling. The fruit is about the size of a hen's egg, roundish or oblong, smooth, yellow; rind, thin, yellow, brittle; pulp, firm, full of bony seeds, flesh-colored, sweet, aromatic, and pleasant. It is eaten raw and also preserved with sugar in the form of jelly. The Red Guava (*P. pomiferum*) has a still more beautiful fruit, but one not so agreeable to the taste. There is still another species, introduced from China, called Cattley's Guava (*P. Cattleianum*) which has a much larger fruit, of a nearly globular shape, and a fine deep claret color. The flesh of this species is said to resemble the strawberry in flavor. All these species are generally propagated by means of seeds taken from fruit brought from the West Indies, but we think they will also grow from cuttings.

The Guava has been grown, we believe, in Florida, but we are not at present able to say just how far north it will succeed. We shall be glad to hear from some one who has fruited it in Florida or elsewhere.

On Apples Spotting.—III.

Many fine mineral springs have now lost those medicinal properties their waters formerly contained. In all places abounding in limestone, many of the springs have not as strong lime taste as formerly, while others still retain all their strength.

From these facts, patent to the observation of all, not only horticulturists, but farmers, should learn a lesson by which better to comprehend why our lands have so rapidly lost their fertility, and how it can be restored and kept up.

While the forests existed, and the surface was covered with leaves, by the decomposition of which an acid (*crenic* or *apocrenic*) was formed of sufficient strength, when combined with water, flowing over and through the minerals lying below the surface, to decompose them by chemical action, then those fine waters were charged with their medicinal virtues. When the vegetable matter is so little as to form an acid (*humic*) of insufficient strength to decompose the minerals in the earth, then these waters lose their virtues, not because the minerals do not exist as abundantly as formerly, but because they remain in an inert or dormant state.

It is true, if mineral matter, ashes, lime, etc., are then added in an available state, they act efficiently at the time, but it does not permanently remedy the difficulty, it only gives time to add or grow the vegetable matter needed to keep in constant decomposition those minerals, sufficiently abundant already, existing in the soil. It is necessary not only that the water should be combined with acid of sufficient strength, but should be enabled to descend into the earth through innumerable pores, giving access to the air with its decomposing oxygen, and making a laboratory of considerable depth, where the chemical and electrical changes can constantly go on.

It is necessary that the porous soil should be deep, for when the moist air is decomposed, and its nitrogen set free, it is absorbed and retained in the soil until, by still further chemical changes, ammonia is generated. The porous soil acts very efficiently in another important point of view. It not only permits the escape of carbonic acid from the interior of the earth, but it arrests it for a sufficient length of time in the laboratory in the soil to cause those chemical changes by which the food of trees and plants is formed, there retaining it until needed for the sustenance of the growth.

What constitutes the food of plants and trees is not fully understood, but observation and research throw some light on it, and this will be further discussed.

W. B. WILKES.

Aberdeen, Miss., October 1st, 1870.

The Tropical Fruits in Florida.

As a subscriber and deeply interested reader of your excellent magazine, I venture to direct your attention to a subject of considerable importance to your patrons in South Florida. I am told that your magazine circulates in both the Western and Eastern Tropics. Such being the case, you could obtain information respecting certain fruits and vegetables that we are desirous of trying in this semi-tropical region, amongst which may be named Cherimoyer, Papaw, or bread fruit; Aguacata, or alligator pear; Iaboticaba Sapadillo, Soursop and Sweetsop, Mango, Tamarind, Jamaica Mamey, Sugar Custard, Rose Apple, and doubtless many others of which I am ignorant.

The easiest and cheapest mode of introducing them would be by seeds. Hints as to the proper soil, cultivation, etc., would be very acceptable. Most

of these fruits are represented by travellers as being exceedingly palatable, yet they are of such exquisite delicacy, and so liable to early decay, as to forbid long voyages. Hence they are rarely found far from home. Smoother and quicker transportation would enable us, if successful in their culture, to share these luxuries with our Carolina and Georgia neighbors. Possibly they might reach even more distant markets. At any rate it is worth the effort.

Through your correspondents in the West Indies, Central and South America, India, and elsewhere, you may do valuable service, for which the patrons of your magazine in this and adjacent sections will hold you in grateful remembrance.

In this latitude the orange, lemon, citron, banana and guava attain full perfection without protection.

The lime is occasionally killed down to the ground; as was the case during the extraordinary cold snap of March, 1869. It puts up again rapidly from the root, and bears in one and a half to two years. These severe spells have so far occurred only at intervals of about thirty years. Excepting such unusual visitations, the pineapple may be cultivated without cover. Even when deemed necessary, the amount of protection required is surprisingly slight. Within the present season as fine specimens of this delicious fruit, grown in our midst, were exhibited at this place as ever grew under the equator.

The banana is attracting especial attention at this time, chiefly because it becomes remunerative much earlier than most other tropical fruit crops. The growth is quite dense, allowing 3,000 to 4,000 plants to the acre. And even at twenty-five cents per bunch, $750 to $1,000 per acre may be realized.

Our country is rapidly filling up with first-class settlers from all parts of the United States. Some wealthy and enterprising gentlemen of Connecticut are embarking in the culture of the orange, banana, etc., on an extensive scale. One of them is having a grove of 120 acres planted out.

If uninterrupted in the prosecution of our peaceful pursuits, we hope by the next decade to give a good account of our operations here.

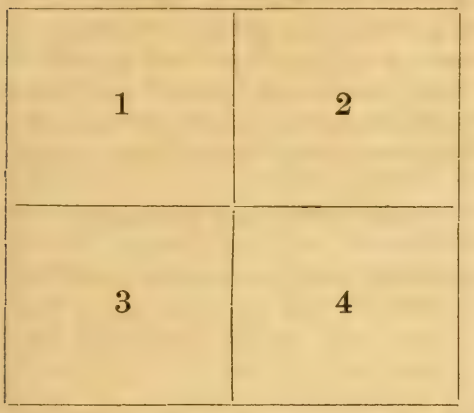
Melonville, Orange Co., Fla. J. N. WHITNER.

Hints on Town Gardening.

The free use of vegetables in our climate is not only a luxury within reach of nearly every one, but also conduces to health; and a well ordered kitchen-garden is no mean adjunct to the thrifty housekeeper, especially in hard times.

How many persons there are, both in the city and country, who deny themselves these luxuries, either from ignorance or indifference. It requires but a small space to give an abundance of choice vegetables if judiciously used, and the proper rotation be adopted. Even in the city, where town lots are small, if a space of twenty feet square can be got, well exposed for the greater part of the day to the sun, a good supply can be had for a small family.

Believing that many persons would like to have a hint on the subject, we will go through a season on a spot twenty feet square for the benefit of our town readers. Those who have more ground at their command, or live in the country, can enlarge and diversify their operations.



Our diagram represents four plots, each ten feet square. As preliminary to any operations, it is necessary that the ground be made extremely rich and deeply spaded; and this manuring and spading must be repeated for each new crop in the rotation—a thing easily accomplished on so small a space.

No. 1. *Lettuce* may be sown in January, in drills two feet wide, and, when large enough, thinned out to one plant, a foot apart. This gives fifty heads to the square. Or, half may be sown in January, and the other half in six or eight weeks after. The ground should be made extremely rich. Cabbage lettuce the best. These will be taken off by May, when either *Snap Beans* may be planted in rows two feet apart, or *Drumhead Cabbage* (sown previously in a nursery row) may be set out at two feet square. Either of these crops would be over in time to get a sowing of *Spinach*, about September or October, for winter use. This rotation gives three crops to this square.

No. 2. Planted in *Tomatoes*, in March or April, will continue in bearing until September, when the vines may be removed, and either *Turnips* or *Winter Cabbage* may be planted. Two crops in this rotation.

No. 3. Planted in *Early Bush Squash*, two feet square, twenty-five hills; or in *Cucumbers*, as may be preferred. By the middle of July these may be taken off, and the second crop of tomatoes, for fall supply, should be set out, with plants sown about end of June or beginning of July. Two crops to this square.

No. 4. Planted in *Early Turnip Beet*, or *Early Horn Carrot*, (or half of each,) about 1st of March. These will be over by August, and the ground be ready for *Turnips*, or *Ruta Baga*, or *Kohl Rabbi*. Two crops to this square.

Radishes may be sown at intervals, for a succession, along the borders of these squares.

These rotations (or such of them as may be adopted, with modifications, to suit the taste of different parties,) will give a succession of vegetables through the year, as the winter crops of turnips, cabbages and spinach will last until spring. No provision is made for okra, potatoes, corn, etc., which would require more space, as these are usually abundant, and can be got elsewhere.

In addition to the useful products from a small garden, thus managed, must

be reckoned the healthful exercise and pleasurable interest one takes in rearing and watching and gathering the products of his own labor. To one who is fond of out-door occupations, and wants relaxation from more arduous duties, it furnishes a constant source of innocent and healthy exercise to both mind and body. The man who plucks the fresh vegetables, or flowers, or fruits from his own garden, gets always a better article than he could in the market, besides the gratification it affords him in watching their progress from day to day—an interest which will grow and increase, and, perhaps, offer many a solace to his mind wearied with anxieties and pressing cares. If DeQuincy, in his raptures over the soothing effects of opium, could speak of "the happiness which might now be bought for a penny and carried in the waistcoat pocket," here, on a twenty feet square of ground, among his cabbages and turnips, the man of business may flee from his cares, and find a sure and secure retreat from the toils and the strifes of the outside world.

Aiken, S. C. H. W. RAVENEL.

Vegetable Physiognomy—Grape Leaves.

Fig. 1.—Leaf of the Catawba.

It is often desirable to be able to tell the variety of grape, strawberry, peach, pear, apple or fig, to which any particular specimen may belong when not in fruit, and when there is no label or other mark to distinguish it. Close and careful observation makes this possible in most cases, and in many quite easy.

We will take the grape as an illustration, and confine ourselves for the present to the leaves. Here is a leaf of the Catawba, (Fig. 1.) Of course there are individual differences among the leaves on the same vine, no two being exactly alike, but this is the general form. The leaves are at first of a light pale green, changing at maturity to a rich yellowish grass green, and underneath yellowish and woolly. The leaf-stalk is greenish, tinged a little with red next the leaf or when fully exposed to the sun.

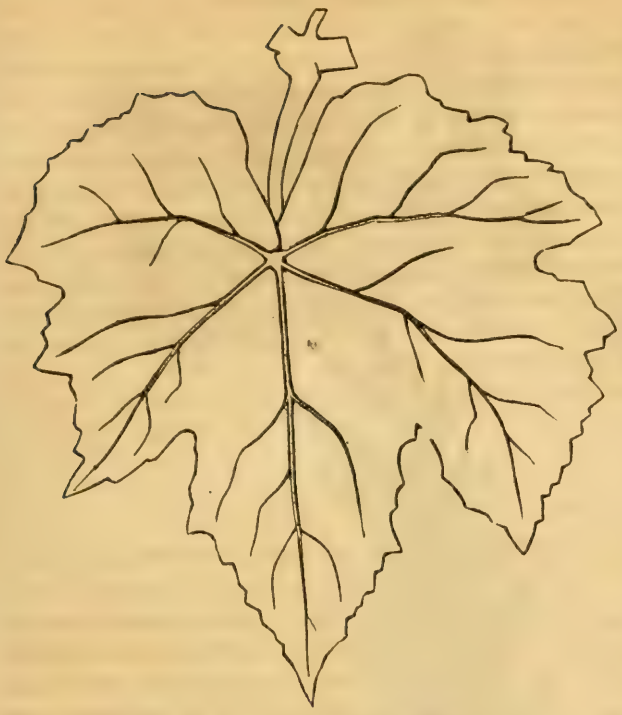


Fig. 2.—Leaf of Ives' Seedling.

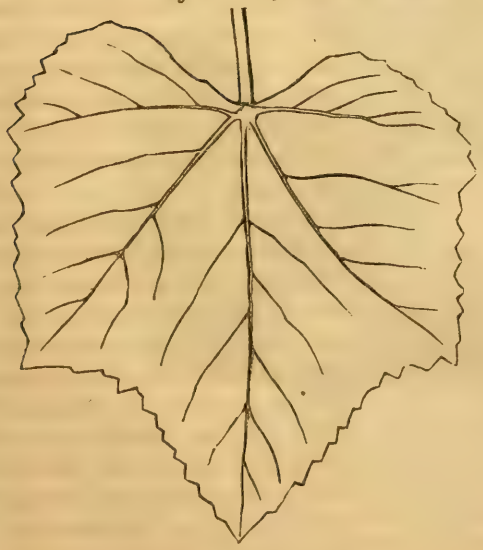


Fig. 3.—Leaf of the Concord.

Observe the difference in the form of the Ives' Seedling leaf, (Fig. 2.) This is at first light green, but soon changes to a deep rich dark green, while the ribs continue prominent of a light green color. The underside is woolly and yellowish. The leaf-stalk is moldy, of a reddish brown midway, but green at each end.

The Concord (Fig. 3) shows us a form of leaf differing from either of the others. In color it is at first of a bright grass green, becoming a very dark sea green at maturity, and yellowish woolly white underneath. Leaf-stalk dull green.

These are given merely as examples. If the reader will look closely into the matter, he will find similar differences in the foliage of the different kind of apples, pears, peaches, and other fruits. The wood and the habits of growth also differ widely in different varieties. Observe and note these differences, and in addition to a knowledge of vegetable physiognomy, which may often be turned to account, you will gain much in the culture of the observing faculties acquired at the same time.

The Cobweb Plant.

This curious and rare plant (*Sempervivum Arachnoideum*) belongs to the Houseleek family of which it may be considered one of the most delicate representatives. It is a very interesting rather than a beautiful plant, though it is not destitute of the latter element. Its specific name, *cobwebbed*, indicates its appearance very clearly ; for it looks as if a spider had run all over it, leaving its web at every point of contact. This is very well shown in the engraving.

Early Ulm Savoy Cabbage.

The Savoy Cabbages are so very much better than the common kinds—so much more delicate and fine flavored—that we cannot refrain from again urging their more general cultivation for family use. There is little demand for this class of cabbages in our markets, where size and solidity of head are the principal requirements.

The *Green Globe*, *Drumhead*, and *Improved American* are all good varieties, but comparatively late. The *Early Ulm* is a very early new variety of quick growth and dwarfish habit. It is excellent in quality, and deserves a place in every garden.

Reply to "The Fruit Question."

On "The Fruit Question" of "A Friend," in your last number, the following remarks are submitted:

It is a law of growth which orchardists should bear in mind, that heavy pruning before the tree is in leaf forces wood growth; while the same pruning, during the rapid flow of the sap induces fruitfulness; therefore we resort to pinching in the tender growth to hasten fruit-bearing. It is likely the twigs of one year's growth of the Russet trees were cut a little from their base, leaving two dormant buds. These not only put forth as twigs, but the wood-buds near the ends of the larger limbs cut off were forced into growth, making many sprouts.

The peach fruit-bud is formed on the last season's growth, but it takes two years to perfect the fruit-spurs on the apple and pear, except the terminal bud on the last season's growth. This end bud usually blooms and bears, unless the tree is in vigorous growth, in which case, after blooming, it shoots into wood-bearing; in fact, any matured fruit-spurs, on the older limbs, would have been forced into wood-growth, after blooming, from such excessive pruning.

In answer to the second question, I remark that each species of tree has its peculiar form of growth. For instance, the Red Astrachan and Shockley throw out their limbs very thickly, some of these should be taken off even with the body, so as to let in the light necessary to bring the fruit to perfection. Such open growers as the Nickajack require no pruning, unless to cut out limbs which cross each other and chafe, and those lower limbs having insufficient light to perfect their fruit; this pruning relieves the tree of much useless wood.

If the soil is good, young trees, before the bearing age, (except mulching,) need no strong manures; it would force excessive wood growth. After a fruit crop is set, add every year only enough manure to mature the fruit, and

enable the tree to perfect fruit-spurs for the next crop, or they will fall into the habit of bearing once in two years.

Vegetable matter added, or grown, such as peas, etc., is better than stable manure, and if such is needed to keep up the vigor, use only enough for that purpose.

Manure broadcast about the 1st May, and plough it under if put on before, it forces the blooms too early, and, more dangerous still, causes an early, tender, upright growth, inducing blight. W. B. WILKES.

Aberdeen, Miss., October 1st, 1870.

Ladies' Finger Strawberry.

This is an early and excellent variety, and not so well known as it deserves to be. It has been for a long time grown in New Jersey, where it seems to

be better appreciated than elsewhere. It is an abundant bearer of handsome appearance but not very large size; fruit of dark scarlet color and good quality. It succeeds in some localities at the South, but requires a deep and rather moist soil.

Horticultural Miscellany.

HOW TO HAVE TOMATOES TILL CHRISTMAS.

I give my plan which I have successfully practiced for many years:

As the early crop of tomatoes cannot be depended on for a fall supply, plant a second crop, sowing seed about end of June. These will come in about end of September. A few days before a killing frost is expected, pick all the tomatoes in, even those that are but half grown. Spread them out in some room, so as to be protected from freezing. They will continue to ripen, and even those that are fully ripe will keep for a length of time without rotting. In this way, I have generally been able to have a supply until Christmas.

R.

THE AUSTRALIAN GLORY PEA.

This is well known among florists as a green-house plant, but has not till lately been cultivated in the open air. It is found, however, to succeed finely in the South, and is a great acquisition as an out-door bloomer.

It has beautiful foliage, of pale green, the edges and underside of the leaves, as well as the stem, being covered with down. The flowers are in clusters, generally five in number, and are a rich, brilliant scarlet, somewhat pea-shaped, and at least three inches in length, each flower being strikingly marked with a large shining black spot in front, on the upper half of the flower, and within this is an opening edged with a narrow band of white.

WHAT IS THE OUACHITA GRAPE?

The *Southern Standard*, published at Arkadelphia, Ark., has the following rather astonishing piece of horticultural intelligence:

"It is not generally known that we have growing wild in the woods of Ouachita, one of the best wine grapes in the world — it is known as the "Ouachita Grape," and is of large size and delicious flavor. Several years ago it was introduced into France by layers from this country, and is now the most popular grape in France, their finest wines being made from it. It is not subject to diseases as other varieties of grapes; is much hardier, and does not require as much cultivation."

What is it? a new or undescribed species, or an accidental variety of a common species? Can any of our correspondents tell us anything more of this wonderful grape?

DOUBLE FLOWER POTS.

Many plants will thrive better in double pots than in single ones; that is, if the pot containing the plant is placed inside a larger one, with earth between the two. The outer pot prevents the sun from striking with too great force on the inner one, and thus keeps the plant moist, and secures for its roots a more uniform temperature. The suggestion appears to be a good one.

HOW TO EXTERMINATE CHINEAL FROM ORANGE TREES.

The *Gardener's Monthly* directs a correspondent to make a thin paste of lard and powdered sulphur, apply it with a mop to the body and limbs of the tree where chineal is deposited; repeat the application in about ten days after the first application, when the chineal will be effectually destroyed, without injury to the tree.

Dairy and Stock Department.

Cotton Seed Meal for Stock.

I desire to ask the readers of THE RURAL CAROLINIAN who have had or who may hereafter have any experience with cotton seed meal as a food for stock, to report the result of it through the columns of your journal. I sent some seed to the Columbia Oil Company, and received a shipment of the meal in July, with which I have made a few experiments. First, I tried feeding my mules with it, and mixed corn meal in the proportion of one quart to one and a half and two quarts of cotton seed meal, all wetted together with oats and other rough feed cut up. They ate the first feed tolerably well, but after that rejected it entirely.

I have also tried my milch cows with it alone; they took to it at once, and ate it greedily. I think, if cooked into a slop for them, it will cause a large yield of milk.

I also had from two to three quarts added to my daily pot of vegetables, cooked up for eighteen shoats, into which is also put three pints of corn meal, and a little salt. These ate it all up clean. I tried my out hogs, too, to which I very seldom give any corn, but they get daily a ration of peaches, and run upon a crab grass pasture lot. Some of them ate it greedily, while others scarcely noticed it. Now, why is this? From my reading, I was led to expect all stock would eat it satisfactorily. I think the Oil Company ought to take more pains in its preparation. It may be they will improve after getting thoroughly under way. It seems to me that the cotton seed should be hulled before being ground into meal; then grind the hulless kernel. That I received I think was ground up hull and all; for even the remaining lint on the seed was in the meal.

I once purchased some flax-seed meal, and all my stock liked it, and it was a most excellent diet, made into a mash, and given after any of them had been sick. After a horse, for instance, had suffered from colic, and the violent symptoms subsided, it acted like a charm. This meal when wetted was very smooth, but the cotton seed meal, on the contrary, was quite rough. I have tried some of it as manure for turnips, and I will give you the result when realized if you desire it. I applied it at the rates of twenty-five and thirty-three bushels per acre, which is equal to seventy-five and ninety-nine bushels of cotton seed.

W.

Florence, S. C.

Spaying Animals.

I will give you, Mr. Editor, for the benefit of your Columbia correspondent, seeking information on the subject, my experience in spaying hogs, as I do not think your Georgia correspondent said all that was necessary, and my plan differs a little from his. Hogs to be operated upon should have no food for at least twenty-four hours beforehand. I use a stick about one and a half inches in diameter, eighteen inches long, a little crooked in the middle, to prevent it from slipping from side to side on pole or rail; on each end of the stick a strong string of soft leather, of sufficient length to make a noose, which is secured to each hind leg above the hock joints, then hang up, and, of course, her head will be down, and so, too, will all the intestines incline down and be out of the way; make an incision about two inches in length in the abdomen, between first and second sets of teats; from hind part of animal, insert thumb and forefinger, when the ovaries are easily found where the womb unites with the body, which are clipped off with a sharp knife. I use in sewing a needle about two and a half inches long, and two or three strands of shoemaker's thread twisted together and waxed with beeswax. I have been at the business for more than twenty years, and do not think I have lost one in a hundred. I pay no attention to zodiacal signs—have been noticing of late, at the suggestion of a friend, and am inclined to the opinion that they bleed *less* when operated on the new of the moon. I never spay in cold weather, but never hesitate on account of heat or "dog days." Animals should always have access to plenty of water. Spaying greatly improves the flesh, and they are much easier fattened. J. J. B.

The Big Milk Leg.

In all my search in books I have never seen any cure for the big milk leg. In November, 1868, my filly took it on the hock joint, and it continued to increase for two or three months, during which time I poulticed it, but all to no purpose. When she lay down I had to lift her on her feet. My son called my attention to Emerson's remedy, since which I have cured the leg, but the joint is large and a little stiff, and lately I obtained *Merchants' Gargling Oil*, and am using it, which I have no doubt will cure her. I sent to New York for the Gargling Oil, kept by druggists.

The following are the recipes of Dr. C. S. Emerson, of Lancaster, Pennsylvania:

Liquid Blister.—Take alcohol, half a pint; turpentine, half pint; hartshorn, four ounces; oil of origanum, one ounce. Apply this, as spoken of, every three hours until it blisters; do not repeat oftener than once in eight days, or it will kill the hair.

Cure.—Apply the liquid blister every three hours until it blisters; then in six hours, grease it with lard; then in eight days, wash the part clean, and apply it again. Repeat it for three or four times, then use the iodine ointment; this will remove it.

Iodine Ointment.—Get one ounce iodine, one pint alcohol; let this stand in the sun two days; and this is the tincture of iodine. Take two ounces of tincture to half a pound of lard, mix well, and you have the ointment. This is used whenever the recipe referred to the ointment.

WM. PHILSON.

Clinton, S. C.

Stock Miscellany.

COLOR AS A SIGN OF QUALITY IN HORSES.

The Arabs illustrate their estimate of the indications of the various colors in horses as follows:

A chief of a tribe was once pursued by enemies. He said to his son:

"My son, drop to the rear, and tell me the color of the horses of our foe, and may Allah burn his grandfather!"

"White," was the answer.

"Then we must go south," said the chief; "for in the vast plains of the desert, the wind of the white horse cannot stand in a protracted chase."

Again the chief said: "My son, what colored horses pursue us?"

"Black, O my father!"

"Then we will go among the stones and rocky ground, for the feet of black horses are not strong."

A third time the young Arab was sent to the rear, and reported chestnut horses.

"Then," said the chief, "we are lost. Who but Allah can deliver us from the chestnut?"

HOW TO JUDGE OF A GOOD DAIRY COW.

Such a cow should have a small, fine head, a mild eye, fine silky hair, soft and loose skin, a deep, narrow chest, broad across the hips, and a large though not dependent belly. The udder should be soft and capacious, not fleshy, and not hanging down very low. The teats should be neither too large nor too small, and should be set wide apart. The milk veins, by which I mean the veins extending from the udder forward to the naval, should be large and knotty, as should the veins extending from the udder up the insides of the thighs.

CURE FOR MURRAIN IN CATTLE.

Lewis F. Allen, in his work on American Cattle, states that purgative medicines are the best remedies, and he recommends a mixture, consisting of castor oil, six ounces; nitre, one ounce; Epson salts, four ounces; whey or thin gruel, one quart. If this does not prove effectual, a drink may be administered, made of two ounces oil of turpentine, one ounce of alum, dissolved, and one ounce of terra japonica. Harris Lewis advises sulphur and salt, and another writer states that an experienced farmer gave half a pint of the juice of the while-blossomed nettle with excellent effect.

POULTRY ITEMS.

Chandler scraps, sheep and calf plucks, beef lights, scraps of meat from the slaughter house, are all good for fowls, and they must have a bountiful supply when closely confined.

Bread soaked in porter, and well dusted with cayenne pepper, is excellent food for fowls out of condition.

To prevent fowls flying, pull out the flight feathers of one wing; do not cut the wing feathers.

Clean water is one of the essentials in a poultry yard. Fowls, as well as human beings, often imbibe the seeds of disease in their drink.

CURE FOR HOG CHOLERA.

One ounce of chloride of lime, one ounce of blue stone, dissolved in water, and mixed in corn meal several hours before using, it is said, will cure this terrible disease. This is sufficient for three feeds, given once a day.

Kerosene oil, one tablespoonful of oil in one quart of meal once a day for five or six days, has also been tried with success.

Department of Natural History.

We have the pleasure of announcing that we have secured in this Department the services of Mr. CHARLES R. DODGE, Assistant Entomologist of the Department of Agriculture at Washington, who will devote especial attention to insects injurious to vegetation in the South, without neglecting, however, other branches of Natural History.

Specimens of insects, accompanying letters of inquiry, (securely packed,) may be sent by mail, post-paid, to Mr. DODGE, Department of Agriculture, Washington, D. C.

Insect Injuries.

When we read of the ravages of a particular noxious insect, that injures to the value of thousands of dollars annually, and then call to mind the vast number of species known to the scientific entomologist, it would be natural at first thought, perhaps, to wonder how we get off so cheaply. Thanks to an all-wise Creator, all insects are not injurious. A check here, and another there, from some oftentimes diminutive (parasitic) insect, creates a balance in nature that in a measure serves to keep enemies in subjection; still there is enough left for man to do, after he has first called to his aid a most powerful ally, the birds. Whoever attempts to rear insects, will better understand it after he has tried to raise certain curious caterpillars, that either die from "internal injuries" before completing half their changes, or produce ichneumon flies instead of butterflies. There are many ways in which insects do injury. One class may destroy the leaves of plants while endeavoring to supply themselves with food; another bores into the stem or wood for the same purpose, while a third fastens itself upon the tender bark, and spends its short existence sucking the sap that should nourish the plant. Others become injurious while following out an instinct nature has given them, in

the reproduction of their species. The gall flies in laying their eggs, instil into the wound a poison which causes the knotty growths often seen upon the leaves and stems of plants. In this paper we propose to show how insects are injurious to vegetation, giving for examples well known species which are found upon the farm or plantation. We will first consider that class of

INSECTS WHICH INJURE FOLIAGE

by devouring directly. Among the beetles or sheath-winged insects (*Coleoptera*) are found some of the greatest leaf-eating pests. In the family of *Lammellicornes* a most common example is the large grape-vine beetle *Pelidnota punctata*, Linn., which takes up its abode on the underside of the leaf it has chosen for food. The insect is about an inch in length, clay yellow, having three black spots on each wing case and two on the thorax. The May beetles (*Lachnosterna*) are all leaf eaters. They are clumsy flyers, and when they enter our houses at night may be known by the way in which they blindly go bumping about against the wall or ceiling. *Macrodactylus subspinosa*, Latr., a little ochre-colored beetle with long legs as well as a long name, destroys the foliage of anything and everything that it happens to alight upon. From being found in such abundance on roses, it has received the name of "rose-bug." The blister-flies or Cantharides, though useful in medicine, are, nevertheless, injurious to vegetation. *Lytta (Epicauta) vittata*, Dej., the striped potato beetle of the Eastern States, may be taken as a type of the family. Other species also feed upon the potato. In the great family to which the plum curculio belongs, (*Curculionidæ*,) commonly called weevils or snout beetles, there are many insects which destroy or injure foliage, but we shall notice them more particularly under another subject.

Chrysomelidæ is the name given to a group of beetles, many of them of small size, which do immense damage to all kinds of vegetation. The Western potato beetle (*Doryphora 10-lineata*, Say) belongs to this class. *Lema trilineata*, Oliv., or, as its name signifies, the three lined-leaf beetle, also feeds upon the potato in the East. Its larvæ have the habit of covering themselves with their own excrement, probably for protection. A small tortoise-shaped beetle, of a brilliant gold color, (*Coptocycla aurichalcea*, Fab.,) found on the foliage of the sweet potato and morning glory, adopts the same means of protection. The striped cucumber beetle (*Diabrotica vittata*, Fab.,) is too well known to need a description. It is particularly injurious to cucumber, squash and melon vines, and has been discovered destroying pear blossoms. The elm-tree Galenuca (*G. calmariensis*, Fab.,) in some places so defoliates the elm, that the whole tree looks as if scorched by fire. The insect somewhat resembles the preceding, though in color it is darker, and has, in addition to the two stripes, two short lines or dots on the wing coverers, near the thorax.

The flea-beetles, though among the smallest of this family, are mighty eaters. Grape foliage is often destroyed by a steel-blue flea-beetle, (*Graptodera chalybea*, Illig.,) measuring a little more than an eighth of an inch in length.

Another flea-beetle, (*Phyllotreta striolata*, Illig.,) ruins young turnip, radish and cabbage plants, causing them to appear as if riddled with shot. It is of a black color, with a wavy, yellowish stripe on each wing case. It measures less than one-tenth of an inch in length. In the family of lady-birds, (*Coccinellidæ*,) which are generally regarded as beneficial, we find one black sheep, which feeds upon the squash vine, both in its larval and perfect stages. It is known to science as the *Epilachna borealis*, Shurub.

In the order *Orthoptera*, which includes the cockroaches, mantes, or soothsayers, grasshoppers, etc., the last named are particularly destructive to vegetation. In some sections of the West, like the locusts of old, they destroy every green thing. Though the most grievous complaints are made against one species (*Caloptenus spretus*, Walsh and Ulher,) called the hateful grasshopper, yet all the commoner species are more or less injurious, and especially where they occur or *swarm* in such immense numbers as are sometimes seen. Crickets are injurious, as they feed upon grass and young and tender plants, and, as Harris affirms, even melons and squashes. The walking sticks or spectres (*Bacteria Sayi*, Burm.) injure the buds and young shoots of shrubs and trees.

As the cockroaches are not confined to any particular diet, but subsist upon whatever they can get, not refusing even paper, we will give them a passing notice in this chapter. The mantis (*M. Carolina*, Fab.,) is beneficial as it preys upon other insects, though it is in turn preyed upon by a smaller insect, whose larvæ live within its body, feasting upon its rich juices.

In the order of *Hymenoptera*, including bees, wasps, saw-flies, etc., we find a few insects which destroy the leaves of plants. Their larvæ, which are called false caterpillars, closely resemble the larvæ of butterflies and moths, (true caterpillars,) though they may be distinguished from the latter by having a greater number of feet. Some of the species, called slugs, are quite slimy, while others are covered with a whitish substance like the bloom on fruit, which rubs off with handling. The perfect saw-fly is provided with four membranous glassy wings, the anterior pair having a dark spot on the outer edge. The larvæ of the imported saw-fly (*Nematus ventricosus*, Klug.) has proved so destructive to the currant in some parts of the North, that its culture has almost been abandoned. Rose bushes are injured in a similar manner by another saw-fly larva, (*Selandria rosæ*,) which eats off the epidermis, causing the leaves to look brown and scorched. *Emplytus maculatus*, Nort., makes itself an unwelcome visitor in strawberry fields.

Other examples might be given, but enough for the present. In the next number we shall have something to say about the caterpillars, (*Lepidoptera*,) which are generally injurious to vegetation, by feeding upon the leaves of plants.

Bird Colonies.

The following plan for building bird colonies is offered for those who deem the matter of sufficient importance to merit their attention: Select a cedar that has wide spreading limbs on all sides, and that is of good, solid heart, and six or eight inches in diameter at the stump. Cut it down, and trim the

top to suit your fancy, leaving a goodly number of the limbs on which to place gourds, squashes, or boxes for bird-homes. Fasten these on firmly over the top—that is, upon the limbs, painting them if you like. Cut holes in these boxes, etc., an inch and a half in diameter to admit the easy entrance and exit of the birds. Plant this tree in any part of your grounds that you wish them to frequent, setting it firmly in the ground; and plant, if you choose, some pretty climbing vine beside it. Do this work at some leisure time during the winter, and when spring returns, and with it the martins, they will be sure to make it their summer home, occupying every box. Thus you will secure a colony of industrious workers upon your premises that will clear your orchards and gardens of "bugs," and aid in keeping off the hawk from your poultry. You may have the bluebird, too, by placing single boxes among your fruit trees; and the sparrow will build in your shrubbery and rose bushes. Such bird homes as the above would add a picturesque effect to our rural landscapes, make our surroundings more pleasant, and may be ourselves more happy. Let us try to make our homes pleasant. We need it.

Cottage Home, Surry, Va. B. W. JONES.

[The study of *Ornithology* is very interesting and useful, and a knowledge of it highly necessary to the intelligent farmer, orchardist, or gardener. Wilson's "American Ornithology" a work of great worth.]

Department of Science and Discovery.

Anæsthesia--What is It? And to Whom are we Indebted for it?

SECOND ARTICLE.

In 1828, an English surgeon by the name of Hickman, proposed to the Academy of Medicine of France, to render animals insensible to pain by drowning them in carbonic acid gas, and desired to have the experiment tried on man. The Academy refused to sanction so hazardous an experiment, and the suggestion fell to the ground.

Nor did anything more come of Morgagni's proposal to compress the jugular veins so as to bring on torpor of the brain by sanguinious congestion with venous blood, a plan not less dangerous than Hickman's.

From all this we see that the idea was as old, and the search after it as persevering, as in the case of the philosopher's stone; with no better results till in 1841–'42, the dream was realized—fancy became fact—the vague hope of ages took form and substance, and the tyrant before whom health and strength and ease and pleasure and life itself had bowed in impotence was, at last, bound in captive chains at the wheels of the conqueror's chariot.

To trace minutely the steps by which Dr. Jackson arrived at his mental conclusions, would be too long; let us see how he finally reached his facts; and his own words will best tell the story.

In a letter to Baron Alexander Von Humboldt, who was investigating the subject, by order of the King of Prussia, to settle the question of discovery, Dr. Jackson says:

"In the winter of 1841–'42, I was employed in giving a few lectures before the 'Mechanics' Charitable Association,' in Boston, and in my last lecture, which, I think, was in the month of February, I had occasion to show a num-

ber of experiments in illustration of the theory of volcanic eruptions, and for these experiments I prepared a large quantity of chlorine gas, collecting it in gallon glass jars over boiling water. Just as one of these large jars was filled with pure chlorine, it overturned and broke, and in my endeavors to save the vessel, I accidentally got my lungs full of chlorine gas, which nearly suffocated me, so that my life was in imminent danger. I immediately had ether and ammonia brought, and alternately inhaled them with great relief.

"The next morning my throat was severely inflamed and very painful, and I perceived a distinct flavor of chlorine in my breath, and my lungs were still oppressed.

"I determined, therefore, to make a more thorough trial of ether vapor, and for that purpose went into my laboratory, which adjoins my house in Somerset street, and made the experiment from which the discovery of Anæsthesia was deduced. I had a large supply of perfectly pure washed sulphuric ether (oxide of ethyle) which was prepared in the laboratory of my friend, Mr. John H. Blake, of Boston. I took a bottle of that ether and a folded towel, and having seated myself in a rocking-chair, placed my feet in another chair, so as to secure a fixed position as I reclined in the one in which I was seated. Soaking my towel in ether, I placed it over my nose and mouth, so as to allow me to inhale the vapor deeply into my lungs. At first it made me cough, but soon that irritability ceased, and I noticed a sense of coolness followed by warmth, fullness of the head and chest, with giddiness and exhilaration, numbness of the feet and legs, followed by a swimming sensation, as if afloat in the air. This was accompanied with entire loss of feeling, even of contact with my chair. I noticed that all sensation of pain had ceased in my throat, and the sensations which I had were of the most agreeable kind. Much pleased and excited, I continued the inhalation of the ether vapor, and soon fell into a dreamy state, and then became unconscious of all surrounding things. I know not how long I remained in that state, but suppose it could not have been less than a quarter of an hour, judging from the degree of dryness of the cloth, which during the stage of unconsciousness had fallen from my mouth and nose, and lay on my chest.

"As I became conscious, I observed that there was no feeling of pain in my throat, and my limbs were still deeply benumbed, as if the nerves of sensation were fully paralyzed. A strange thrilling now began to be felt along the spine, but it was not in any way disagreeable. Little by little sensation began to manifest itself; first in the throat and body, and gradually it extended to the extremities; but it was sometime before full sensation returned, and my throat became really painful.

"Reflecting on these phenomena, the idea flashed into my mind that I had made the discovery I had for so long a time been in quest of—a means of rendering the nerves of sensation temporarily insensible, so as to admit of the performance of a surgical operation on an individual without his suffering pain therefrom."

Up to this experiment, all the authorities agreed in pronouncing ether irrespirable. Orfila, Brande, Pereira and Christeson, class it with the narcotic poisons. Mr. J. H. Blake's cases showed that recovery from the stupor produced by the inhalation of ether vapor might take place in a current of air, but no one imagined that the subjects were insensible to pain.

It was now Dr. Jackson's object to get the experimental trials made. How this was done, and how the agents soon began to usurp the place of the principal, it would be too long to tell. Sufficient for the present purpose, to say that, after the usual strife of conflicting claims, the world has agreed to place Charles T. Jackson high on the list of its benefactors.

The list of substances, of which trial has been made for anæsthetic purposes, is already long and it may become much longer. M. Bouisson, in his work on the use of anæsthetic agents, published in Paris in 1850, gives the following list:

1st. Hydrochloric Ether mixed with Sulphuric Ether, by M. Fleurens. 1847.
2d. Acetic Ether, by M. Fequier. 1848.
3d. Nitrous Ether, by M. Fleurens.
4th. Nitric Ether, by Dr. Simpson, on animals.
5th. Aldehyde, by Poggiale.
6th. Chloride of Hydrocarbon, by Dr. Nunnelly.
7th. Formomethyle, by M. Bouisson.
8th. Benzine by Drs. Simpson and Snow.
9th. Bi-Sulphide of Carbon, (experimenter's name not known.) 1848.
10th. Amelyne, by Dr. Snow, of London.
11th. Oil of Turpentine in England.
12th. Kerosolene, by Drs. Jackson and Bigelow.

Experiments are still going on, and the articles used becoming daily more varied. Who can imagine when or where the best will be found? This question is not for present consideration. Our object now is only to determine who bestowed on the world the gift of Anæsthesia.

When Watt discovered the properties of steam, and the applicability of those properties to the movement of machinery, he bestowed upon the world an *idea* which no man of this day dares lay claim to, however superior his faultless locomotive may be to the rude contrivances, by which the inventor and his first imitators exhibited their discovery. So will it be with Anæsthesia. The *idea* is *unit*, and must, forever, be inseparably joined with its discoverer.

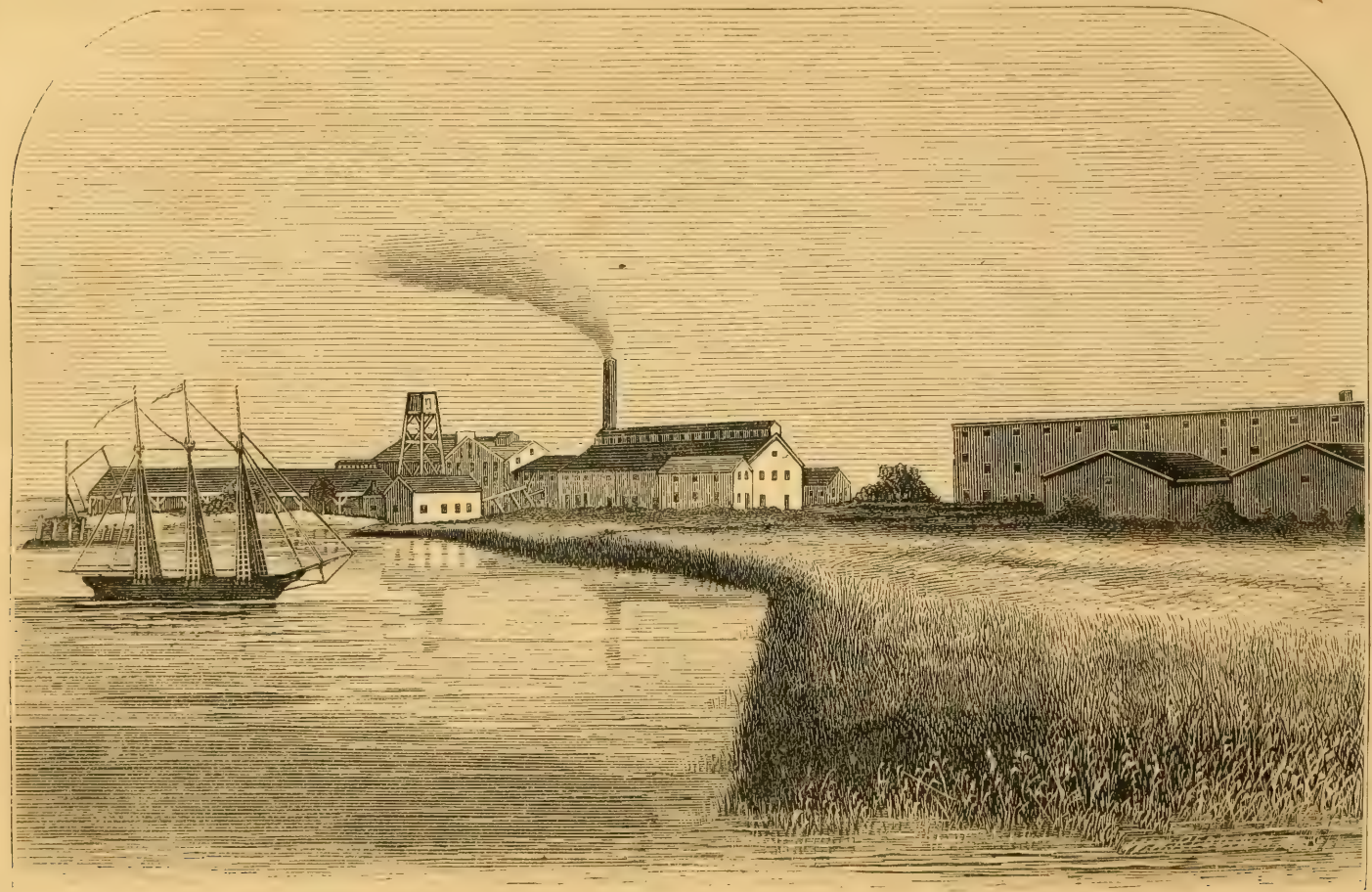
Such is now the verdict of the scientific world. The French Academy of Sciences leads off, and the Emperor bestows on Jackson the grand Cross of the Legion of Honor. The world-renowned Humboldt investigates the case, and the King of Prussia invests him with the decoration of the Red Eagle. Victor Emanuel makes him a member of the Order of Saint Maurizio é Saint Lazzaro, and from the Sultan he receives the high distinction of knighthood in the Turkish Order of the Medjidich.

Before concluding, it may seem proper to say a word regarding the claims of the Dentist, W. T. G. Morton, to whom Jackson communicated his discovery in September, 1846, and who made the experiments at the Massachusetts Hospital in October under his instructions. These claims have no foundation; he acted merely as an agent.

Department of Mining and the Mechanic Arts.

The Sulphuric Acid and Phosphate Company's Works.

The Sulphuric Acid and Superphosphate Company was established at Charleston in the year 1868, for the purpose of manufacturing, at home, the highest possible grade of fertilizers from the native bone phosphates, then lately discovered in South Carolina. Sulphuric acid being the best solvent of these phosphates, this Company immediately addressed itself to the work



Etiwan Works of the Sulphuric Acid and Superphosphate Company, Charleston, S. C.

of manufacturing that material, and erected, on Town Creek, near the City of Charleston, a large establishment called Etiwan Works, after the Indian name of Cooper River. They have, since that date, continued to extend these works, and to increase their capital, until now, with a capital of $400,000, they have one of the largest manufactories of sulphuric acid, and of fertilizers, at the South.

Their works consist of two sets of chambers, for manufacturing the acid, which jointly have a capacity of 200,000 cubic feet, and can manufacture about seventy-five tons of acid weekly. They have mills which grind up the native phosphates to an impalpable powder, in sufficient quantities to consume all the acid made, and they apply that acid so as to make soluble as much of the phosphoric acid, contained in the native bone phosphate, as is practicable.

But, next to phosphoric acid, the most important ingredients in a fertilizer are ammonia, potash and lime. The first of these materials this Company procure from Peruvian Guano, of which they import large quantities, and mixing the same with the dissolved bone phosphate, and sufficient quantities of potash, they produce a fertilizer which they call Etiwan Guano. In this way they furnish a manure ready for the use of the planter, while they at the same time afford him the material for making his own manures at a cheaper rate, if he should choose to purchase the bone simply ground, or reduced by acid before admixture with Peruvian Guano or potash.

One of the great difficulties, in the manufacture of high grades of phosphoric acid, is that the compound becomes pasty and reunites in a mass, which it is necessary again to reduce to powder. To do this, an ingenious machine has been invented, called a disintegrator, which, by rapid movement of the material between iron bars, breaks it up and makes it fine enough for the use of plants. In this process the additions of the other materials above mentioned, is made by measure, and the article is then screened and packed for shipment.

Works of the Wando Mining and Manufacturing Company.

The Wando Mining and Manufacturing Company was organized by John R. Dukes, Esq., the President of the Company. In consequence of information received from Col. L. M. Hatch, the rock on Ashley River was brought to the notice of Dr. St. J. Ravenel, at that time scientific adviser and partner in the business, and from a specimen obtained of him, resulted, through the analysis of Dr. N. A. Pratt, the knowledge of the high percentage of phosphate of lime it contains.

The Company has its mines on Ashley River, from which they get their supply of crude phosphate for manufacturing purposes. The first cargo of rock sent from this port was from the Company's mines, and of the large

amount dug they have sold a portion to other companies, and used the remainder in the manipulation of their fertilizer.

The mines are situated about nine miles from the city, on Ashley River, and the cut in this number of THE RURAL CAROLINIAN gives a fair view of their wharf, acid chamber, washer, etc. The mines are a little back from the river, and a track with cars drawn by mules is used to convey the phosphates to the washer, where all the sand and clay is thoroughly taken away, and the rock transferred to the wharf or contiguous to their new factory.

In consequence of the very great demand for the "Wando," the Company has been forced to erect a new factory at the mines, the present building, with its ample storehouses and wharves, proving altogether inadequate for its requirements.

The main factory is a very extensive building, at the foot of Hasel street, and with the finest machinery, made in this city at the foundries of the Messrs. Eason, presents one of the most enlivening proofs of the energy and enterprise of our people.

The capital, management and superintendence is all native, and does great credit to the ability of our people to start and carry on successfully great enterprises.

The great success of the Wando Company may be attributed, in a large measure, to the energy and business talent of its officers, who are men of practical skill, thoroughly understanding what they are about. The able and untiring President, Mr. John R. Dukes, and the active, energetic and efficient Superintendent, Mr. Thos. D. Dotterer, have been especially instrumental in making the Wando what it is.

Manure Pits, and How to Use Them.

Alex. Y. Lee, Esq.:

DEAR SIR: I have read with great interest your communication in the May number of THE RURAL CAROLINIAN, in regard to improved farm buildings. In your estimate of the cost of building a stable, you put down the cost of building a properly constructed *manure pit* at fifty dollars. As I regard a manure pit as essentially necessary in these times, can you not enter more into details concerning the proper manner of constructing one, of what material, whether of brick or wood, etc., etc. Is not $50 a very moderate estimate of the cost of building one? Can you not tell us how to make an estimate of the number of bushels a pit may contain at any particular time? A communication either to myself personally, or, what would perhaps be better, through THE RURAL CAROLINIAN, as I presume most others are equally interested with myself, would sincerely oblige,

Yours, respectfully, ALBERT R. HEYWARD.

Ashepoo, August 15th, 1870.

In reply to this valuable communication of Mr. Heyward, and in answer to inquiries from several other parties on the same subject, I will present a few

details of the construction of manure pits, and of the mode of saving the manure.

The floors of all stalls should be so constructed as to afford sufficient drainage for all liquid manure that may be dropped, and a continuous gutter along the line of stalls should be put in to conduct this liquid to the manure pit wheresoever it may be situated, whether immediately under the stable or outside at one end, as I have it in my design in the May number of THE RURAL CAROLINIAN, with a board cover or shed to exclude the rain. Iron gutters for this purpose can be had of any manufacturer advertising stable fittings for sale.

As a matter of stable economy, it would be well for our farmers to examine into the merits and uses of the modern fixtures now being manufactured of iron; and I think that manufacturers lose sight of their own interests by not advertising these improvements through such medium as THE RURAL CAROLINIAN, and their readers are kept behind the times by not having their attention called to them.

The first step towards constructing the receptacle for the manure is to excavate to the depth of eight feet, a convenient depth to discharge from, and to make the pit 10x15 feet for a stable having the number of stalls represented in the design. This pit will contain 1200 cubit feet of manure when full, which is equivalent to 937½ bushels, which is 117 1-5 bushels to every foot depth of the pit.* This pit, I think, will hold a season's droppings, and it may be made larger or smaller according to the judgment and wants of the owner.

It should be lined with a four inch brick wall, which if laid in good lime mortar will be strong enough, and will require 2,400 bricks, which in many localities ought to be laid in the walls at an expense not exceeding $20 per M.

Forty-five cubic yards of earth to be thrown out at ten cents, is $4.50, making a total cost of pit, of the above mentioned size, to be $52.50.

Now for the use to which it is to be put to. If the gutters are cleansed often, they will freely conduct all the liquid droppings to the pit; the solid fæces should be wheeled to the window provided for the purpose and there be discharged into the pit, and after a sufficient quantity has been thrown in, enough to cover over the bottom, a thin covering of earth should be applied, which serves a double purpose, first as a deodorizer, then as a retainer of the soluble properties of the manure. Continue this alternating process until the pit is full, and you will find that when you come to empty it that you have manufactured and saved a valuable manure. The farmer with one of these receptacles, well covered from rain, will have an opportunity of composting his stable manure with other fertilizers, with very little expense and trouble.

ALEX. Y. LEE, Architect and Engineer.

Columbia, S. C.

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*1 Cubic foot, equal to 6,232 gallons.
1 Cubic inch, equal to 0,003,607 gallons.
1 Bushel, equal to 2,218.19 cubic inches.
equal to 1.28 cubic feet.

THE RURAL CAROLINIAN.

VOL II.] CHARLESTON, S. C., NOVEMBER, 1870. [No. II.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

READING FOR FARMERS.

The winter is not here, as in more northern climates, a season of enforced leisure with the farmer, the mildness of our weather making it the most favorable time for many of the heaviest operations of the plantation; but as no growing crops or encroaching weeds now press him, he can allow himself occasional respites from labor, to be devoted to reading, study or recreation. The evenings, too, are long and can be more profitably spent at home, book in hand, than at the country store or tavern. The same remark is still more emphatically true of the farmers' sons. Properly chosen books are excellent company, which cannot be said of all whom one may meet at the public places we have named.

Every house should have at least a little book-case judiciously filled. The number and the kind of books it should contain, must depend upon the education, tastes and means of the family; but books every family should have.

It is not our present purpose to give a list of books on general subjects suitable for the family book-case, but to furnish a hint or two to farmers on farm-books.

In the first place every farmer should take at least one agricultural paper or magazine. The least pretending of these will furnish, in the course of the year, information, hints and suggestions, worth to the reader many times the cost. Those who can afford it should subscribe for several such periodicals.

Of books there are many that are very useful, and a few that may be considered almost essential. Scarcely two persons would choose the same list throughout, one being specially interested in one branch of the general subject of agricultural, and another in a different one, so that any list we may give should be considered as merely a hint toward a selection of good books for any particular individual. Suppose, then, a person wishes to buy a dozen volumes with which to commence an agricultural library. What would be a good selection? We suggest the following:

Allen's New American Farm Book	$2.50
" American Cattle	2.50
Dickson's Practical Agriculture	4.00
Lyman's Cotton Culture	1.50
Flint's Grasses and Forage Plants	2.50
Herbert's Hints to Horse-Keepers	1.75
Randall's Sheep Husbandry	1.58
Darlington's Weeds and Useful Plants	1.75
Thomas' Fruit Culturist	3.00
White's Gardening for the South	2 00
Holmes' Southern Farmer	1.50
Johnson's How Crops Feed	2.00

"Low's Domestic Animals," a most valuable English work, should be considered indispensable to the grazier and breeder. "Randall's Practical Shepherd," ($2.50), may be substituted for his "Sheep Husbandry," where sheep-raising and wool-growing is to be largely pursued. "Fuller's Small Fruit Culturist," ($1.50), "Husmann's Grapes and Wine," ($1.50), "Harris on the Pig," ($1.50), "Harris' Insects Injurious to Vegetation," ($4.00), and "Warring on Draining," ($1.50), are works that might be profitably added. Book-sellers generally have, or can get these works at the prices named.

Book-farming pays when the farmer has the good sense to make proper use of the knowledge he gets in books, modifying their instructions to suit the peculiar conditions of soil, season and climate under which he labors. Books can no more take the place of observation and experience than spectacles can be substituted for eyes; but they are *helps*.

THE AUTUMN FAIRS.

Some of the great autumn fairs have already taken place, but we go to press too early to publish any notice of them. An uncommon degree of interest seems to have been felt in their success everywhere, and we cannot doubt but that they have met all reasonable expectations, so far. The November fairs are now at hand. First, that of the South Carolina Institute, at Charleston, opening on the first instant and continuing five days, and the Virginia State Fair, which holds its session at the same time. Next come the South Carolina State and Alabama Union fairs, the former at Columbia and the latter at Selma, on the 9th–11th. The Cape Fear Agricultural Society's fair at Wilmington, N. C., closes the list, 11th–17th.

Our readers will have made all their arrangements before this number reaches them, and we trust they will allow no common obstacle to prevent them from attending at least one of these fairs, if within a reasonable distance of their homes, and that they will make good use of the opportunity to learn something that may be turned to profit in the future. These fairs are not got up merely for the amusement of a crowd, but to promote agriculture and the arts.

THE ISTLE AGAIN.

The *Rural New Yorker* (good authority in most cases) says that the *Istle*, *Yistle* or *Pita*, of Mexico and the Gulf coast, is the Century Plant, (*Agave Americana*,) and the *South-Land* publishes the statement without correction. We may be wrong, and shall be glad to be corrected if we are so, but we believe that the *Rural New Yorker* has confounded two plants which, though resembling each other in appearance, belong to different botanical families. The Istle, if we mistake not, is the *Bromelia sylvestris*—not an *agave* at all. The error, if it be one, is calculated to do harm, by misleading those who may desire to cultivate the plant. The *B. sylvestris* is a shade-loving plant of the forest, while the *agave* flourishes best in the fiercest glare of the sun. Will not our correspondent, Prof. S. B. Buckley, let us hear from him on the Istle question?

THE CHARLESTON FAIR.

We are glad to learn that the prospects are bright for a grand display and an immense gathering of people from all parts of the United States, in this city, on the first of November. The old South Carolina Institute is itself again, and having put its hands to the work, knows no such word as fail. There is not only "life in the old land yet," but there is industry, energy, perseverance, and a determination to live to some purpose, and that purpose a grand one. We shall show the world that even Charleston is wide awake, and fully alive to her business interests.

We are indebted to E. Whitley & Co., of Murfreesboro', N. C., proprietors of the Kapnophyte fertilizer patent, for a permit to make use of the process in our own farming operations. We shall take pleasure in testing it and reporting results. We have already mentioned this new process. It consists essentially in burning damp pine straw, leaves, or other vegetable matter, in a peculiar way under a layer of earth, by which the smoke and fertilizing gases are absorbed and retained. They call the fertilizer thus made "the poor man's manure," and sell rights to make and use it.

P. Figyelmsey, Esq., United States Consul at Demerara, British Guiana, has sent us bark and seeds of the Greenheart tree, said to possess similar qualities to Cinchona or Peruvian bark. We have also the promise of other seeds, plants, etc., from that country, for which Mr. Figyelmsey will please accept our thanks in advance. The seeds of the Greenheart tree, which are of the size of large black walnuts, will be distributed among nurserymen and others for trial.

A bottle of "Muscatel" wine, of the vintage of 1869, from J. J. Lucas, Esq., of Society Hill, S. C., furnishes another proof that the Scuppernong is a true wine grape. But our readers will be more interested in learning that it was accompanied by an essay on "Wine," from the pen of Mr. Lucas, which will appear in our next number. Mr. Lucas will please accept our thanks for both.

A. L. C. Portman, Esq., United States Secretary of Legation, at Yedo, Japan, has notified us of his intention to send us seeds, cuttings, and plants. The climate of Japan is similar to our own, and we hope much from further additions to our list of fruits and vegetables from that country.

Mr. H. W. Ravenel, of Aiken, S. C., will please accept our thanks for a very acceptable box of fruit. The Black Scuppernong grapes were very fine—better than any of the white scuppernongs we have tasted this season.

We are indebted to D. M. Dewey & Co., of Rochester, N. Y., for a series of colored plates of fruits and flowers. Nurserymen who wish to illustrate their catalogues in the most beautiful manner, at small cost, will do well to communicate with them. They have a large number of fine Southern fruits on their list.

We trust that none of our readers will allow the length of Professor Hilgard's most able and instructive article in the present number to prevent its careful perusal. In our next number, he will present some additional practical considerations concerning soils and manures, as a complement of what he has now set forth.

An article on "Rust in Wheat," from our correspondent "G.," was received too late for this number. Articles on "The Steam Plough," "Dignity of Human Labor;" "Disadvantages *vs.* Advantages," and many others, lie over for lack of room. We hope to publish them all in our next number.

Some one has sent us an article entitled "In answer to Does Subsoiling Pay?" the closing portion of which is missing, the manuscript ending abruptly on the fourth page. We have not the writer's address.

FARM AND GARDEN NOTES.

Tree Luzerne in France.

Among the plants lately introduced into, cultivation in France, is the Tree Luzerne, (*Medicago arborea,*) which grows spontaneously in Italy, Greece, and other countries on the Mediterranean. It is suited for dry lands and arid climates, and in positions where the ground is too steep for the plough. It often attains the height of seven feet; is very bushy and has a plentiful foliage. According to the nature of the ground, the branches may be cut and dried, or the stock turned in to browse. The stems sprout vigorously and rapidly. The plant is nutritive, well relished by all animals, and preserves and develops its leaves during the winter.

Swiss Chard or White Beet.

We have already called attention to this vegetable as among the plants which should be better known and more generally cultivated. Another season's experience with it more than confirms our good opinion of it. It is grown for the leaves only, and makes the most delicate of greens, while the midrib and leaf-stalk peeled, boiled and served with butter, are almost equal to asparagus. It is cultivated precisely like the common beet, except that the plants require more room. Thin them to one foot apart in the row.

The Hyacinth in Moss.

The Hyacinth will grow in flower-pots, glass vases, cups and saucers filled with fresh moss, as well as in a compost of good mould; one great advantage of growing them in this way is, that several bulbs of different color may be planted together, and owing to the lightness of the moss, they can be carried to any part of the house at pleasure.

Early Tulips, Narcissus, and Crocus may be treated in the same way.

The Asparagus Bean.

We received, last spring, from a correspondent in Mississippi, a few beans said to produce very long pods and to be very prolific. The plant proved to be what has long been known as Asparagus Bean, or Yard Long Bean, botanically a *dolichos,* and allied to our cow pea. We tried the tender pods in the way of snap beans, but found them inferior to the latter. It may be valuable for stock.

Snap Beans in November.

We are now (October 15) having an abundance of the sweetest and tenderest of snap beans from plantings made about the first of September, and have several rows, just in

bloom, that will, if frost hold off, supply our family during the first half of November, if not longer. Turnips, radishes and lettuce are also abundant. Tomatoes, eggplant, cucumbers, sugar corn and Irish potatoes (second crop) are also still in season with us.

How few persons take full advantage, in gardening, of our mild, delightful autumns!

Southern Grapes in New York.

The *Horticulturist* warns Southern grape-growers against sending their fruit to New York. Grapes, from the South, sold in August for *five cents a pound.* There is no sale for grapes there, at remunerative prices, till toward October 1st., by which time the season for the Southern crop is past.

SCIENTIFIC NOTES.

Odorous Plants vs. Malaria.

The essences of odorous plants — such as clover, mint, lavender, juniper, lemon, bergamot—are stated by Prof. Mantegazza to be even more powerful in developing ozone in sunlight than is phosphorous. He suggests that such highly odorous plants should be freely planted about houses in miasmatic regions.

A New Projectile.

Captain Ericsson announces that he has perfected a system of submarine attack by which he can destroy the largest iron-clads ever built. His projectile is an elongated shell, charged with 300 lbs. of dynamite, and shot from a fifteen inch gun at such an elevation as to enter the water near the hostile vessel, and strike the hull anywhere below the water. He challenges the new British iron-clad, Devastation, to come out and be sunk.

The Chemistry of Old Bones.

M. Scheurer-Kestner states that he finds in bones which have been buried for long periods, besides ossein, which is insoluble in water, another organic nitrogenous substance, soluble in water, and into which he supposes ossein to be gradually changed. Running water gradually removes this soluble modified ossein, and consequently the ancient bones found in loose imperious soils contain very little organic matter, while those buried in compact clay may retain a large quantity of it. For this reason the most valuable Charleston phosphates are those found imbedded in clay. The rate of decomposition thus varies with the nature of the soil, but in the same soil M. Scheurer-Kestner believes that the relative age of different bones can, to a considerable extent, be determined by their chemical composition.

How to Keep Cut Flowers Fresh.

Add to the water in which they are kept a small quantity of a solution of carbonate of ammonia and a few drops of phosphate of soda. Also cut off the ends of the stems for about half an inch, with a sharp knife, every other day. If these directions are followed, the flowers may be kept as long as if they had remained on the parent plant.

Preserving Meat.

Mr. Georges, in Montevideo, S. A., preserves meat by immersing it in a liquid composed of eighty-five per cent. water, and a mixture of glycerine with acid sulphite of soda and hydrochloric acid, and afterwards strewing dry sulphite of soda upon it, and sealing hermetically in cans. After the lapse of a year the flesh was perfectly fresh. Before using, it must be rinsed with diluted vinegar, and left exposed for a short time in the air.

Clarifying Water.

M. Schloessing has shown that clay is soluble in distilled water. There appears to be a colloidal solution that will remain for months, but if a drop of chloride of lime be introduced the liquid becomes instantly clear. The water of the Mississippi always contains more or less alumina in suspension, which can be removed by adding a few drops of a solution of chloride of calcium, or of sulphate of lime. In this manner the Egyptians clarify the water of the Nile, which is always turbid.

EXCHANGES.

We have received the first number of *The National Live-Stock Journal*, published at Chicago, Ill., (Stock Journal Company, $3 a year,) and are glad to note the promise it holds out of being what a National Stock Journal should be. Those in want of a journal of the kind will do well to send for a specimen copy and judge it for themselves. It makes a good beginning in its first number.

—— *Frank Leslie's Boys and Girls Weekly* pleases "our young folks" greatly, and we are exhorted to give it a "good notice." To say that the boys and girls like it, is a good enough notice. (Frank Leslie, New York, $2 a year.)

—— *Frank Leslie's Ladies' Magazine* is a favorite with fair sex everywhere, and one has but to consult its pages to know just what to wear and how to wear it. It is full, too, of entertaining reading—stories, sketches, anecdotes, etc. (Frank Leslie, New York, $3 a year.)

—— *The Scientific American* is a paper that we always read with pleasure and profit. To the mechanic, the manufacturer, the inventor and the man of science its value is beyond question. (Munn & Co., New York, $3 a year.)

—— *Old and New* is a racy and progressive magazine from Boston, (Roberts Bros., $4 a year,) and edited by Edward Everett Hale. One of its prominent attractions at present is a story entitled "Pink and White Tyranny," by Mrs. "Uncle Tom" Stowe. The October number reviews the McFarland Trial, Newman's Letters, Catholic Church Instruction, etc., and has a large number of readable articles.

—— *Good Health* (Alex. R. Moore, 21 Franklin street, Boston, $2 a year,) is an excellent publication, giving valuable information how to *preserve* health—a far more important kind of knowledge than how to restore it. It is adapted for the family, and contains a very large amount of practical information connected with hygiene and every day life.

—— Progressive agriculture has now an organ in Arkansas—*The Arkansas Agricultural and Mechanical Journal*, published at Little Rock, by J. S. Duffie & Co. May it meet the hearty coöperation of the farmers of the State in the good work upon which it has entered.

—— *Giornale di Agricoltura del Regno Italia* is the organ of the Central Agricultural Commission of Italy, and is published at Bologna. It devotes itself with zeal to the improvement of Italian agriculture.

—— *The Small Fruit Recorder*, edited and published by A. M. Purdy, at Palmyra, N. Y., is a cheap (50 cents a year) and very useful little monthly devoted to the small fruits.

—— *The Practical Planter* is the name of a new candidate for the patronage of the Southern agriculturists, published by R. C. Hite & Co., Memphis, Tenn., and edited by Dr. H. W. Peters. The first number, now before us, opens well, and promises a useful career for the magazine. We hope it may be as profitable to the proprietors as to the public.

—— New Orleans has now an agricultural and literary weekly which may well claim to worthily represent the great Southwest, of which she is the magnificent metropolis; and we trust that the *South-Land* paper will not lack the support of the South-land people. D. Redmond, Esq., well known in the South as formerly editor of the *Southern Cultivator*, fills the editorial chair, and brings all his energy and experience to bear upon the work before him. The *South-Land* is a good paper, and we wish it and its publishers (the "South-Land Company") success in their enterprise.

—— The *Farmer's Gazette*, L. Bassett French, editor and proprietor, Richmond, Va., is a well conducted monthly, devoted to agriculture and the industrial arts generally. It is a sound, practical and every way excellent work.

—— The *American Grocer* is an excellent paper, devoted to the interests of the trade, and contains a great deal of information interesting and profitable to persons not in the trade, especially house-keepers. No grocer in city or country can well do without it. Published by John Darby & Co., 161 William street, New York.

MERE MENTION.

Pears have sold in New York the present season as low as $2 a bushel, the lowest price they have been known to reach for more than ten years. Late Pears sell better than early ones.

—— Bananas are grown, with slight protection during the winter, in Jacksonville,

Florida. A dwarf kind, growing only three or four feet high, has been introduced.

——Advices from Egypt represent the cotton crops of this year as enormous. England is the principal market for Egyptian cotton.

——*The Florida Land Register* speaks favorably of some "Japan Seedling Peaches," grown by Col. Hardee, near Jacksonville.

——Our correspondent, Benjamin Baker, has grown a mammoth Pineapple, measuring nineteen inches in circumference and weighing five pounds. It was grown on Key Largo, Fla.

—— There are one hundred cotton plantations on the Fegee Islands, producing long staple sea-island cotton, within six months after planting. The production goes on year after year without replanting.

—— The Empire (or Republic) of France, with not so much area as the State of Texas, raises more wheat, in quantity, than the United States of America all told, reckoning from Alaska to Florida, and from Texas to Maine.

—— The coffee from a plantation near Colima, Mexico, is said to be the best in the world. There are 4,000 trees. Coffee from this plantation took a premium at the Paris Exposition.

—— A correspondent of the *Country Gentleman*, who has been abroad, says that the cause of the superiority of English and continental mutton over that in America, is in the simple sentence, "they feed turnips."

—— A Swiss naturalist in Texas has discovered a native silk-worm thought to be superior to that of Japan.

—— The Panola Oil Company of Memphis, made last year over 2,500 tons of cake and 100,000 gallons of oil; the Memphis Company about the same, and several smaller concerns about half as much.

—— A correspondent of the *Germantown Telegraph*, who lost seventy chickens by gapes, last year, now says that fresh water, daily, with a lump of roll brimstone kept in it, will be found a certain preventive.

CATALOGUES RECEIVED.

Georgia Nursery, W. K. Nelson, Augusta, Ga.; Fruit Trees, Grape-Vines, Strawberry Plants, etc.

——*Brooklyn Flower Farm*, C. L. Allen & Co., 74 Fulton street, Brooklyn, N. Y.; Flowering Bulbs and Seeds.

——*Atlanta Nurseries*, Harden & Cole, Atlanta, Ga.; Fruit Trees, Vines and Shrubs.

—— *Georgia Stock*, Richard Peters, Atlanta, Ga.; Cattle, Sheep, Hogs, and Angora Goats.

——*The York, Pa., Seedsmen*, Edward J. Evans & Co., York, Pa.; Field and Garden Seeds.

——*Dreer's Establishment*, Henry A. Dreer, 714 Chestnut street, Philadelphia; Bulbs, Flower Roots, Seeds and Plants.

——*Locust Hill Stock Farm*, Robert W. Scott, Frankfort, Ky.; Cattle Sheep, Hogs, and Angora Goats.

——*Jackson Central Nurseries*, A. L. Hatch, Jackson, Miss.; Fruit and Ornamental Trees, Grapes, Strawberries, etc.

——*Nursery Stock*, L. Boardman & Co., Rochester, N. Y.; Trees, Plants, Vines, etc.

——*Mount Hope Nurseries*, Elwanger & Barry. 1. Fruit Trees and Vines. 2. Ornamental Trees and Shrubs.

——*Herendon & Co.'s Nurseries*, Herendon & Co., Geneva, N. Y.; Trees, Plants, Seeds, and Flowering Bulbs.

——*Springfield Flowers*, Ferre Batchelder & Co., Springfield, Mass.; Hardy Bulbs.

——*Washington street Nurseries*, Graves, Selover, Willard & Co., Geneva, N. Y. 1. Fruit Trees, Plants and Vines. 2. Ornamental Trees, Shrubs and Plants.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

GROWING TOMATOES.

Editor of The Rural Carolinian:

At page 63, Home Department of October number, under head of "Recipes," "Broiled Tomato," you advise, "First, raise your tomato." Now, that is just the point I wish to get at. I have made several trials to raise the tomato, but have failed. The vine will grow large and healthy, while the fruit is never larger than the "smallest potato."

Please let us have *light* in a coming number, and oblige J. M. R.

West Florida, October 3d, 1870.

The tomato is a very easy vegetable to grow, and we are at a loss how to give any instructions that will meet our correspondents case. The best plants are those grown in the open air. A light loamy soil deeply dug and made moderately rich will suit them best. If the ground be tolerably rich, plant at least three feet apart each way. Before the plants begin to bear, tie them up to stakes and mulch the ground heavily. As the flower buds appear, nip off the shoot above them, which makes the fruit grow larger. The past season, in this vicinity at least, was unfavorable to the tomato crop, and, like our correspondent, most of our gardeners had a growth of vine quite out of proportion to the quantity of fruit.

WINTER SQUASHES.

Editor of The Rural Carolinian:

Will you in your next number put out an inquiry as to the best winter squash for our latitude. I planted for several years the "Potato Squash," (very much like Coosaw), crooked-necked and striped with green, becoming yellowish when ripe. They kept well through the winter and were very fine, but I have lost the seed from the borer worm. The *Hubbard* and other famous Northern squashes do not suit us. I find the *Yokohama* cannot stand our hot and dry climate, though I see by the papers that Mr. Vardell has been exhibiting fine specimens of each. R.

THE GAPES IN CHICKENS.

Editor of The Rural Carolinian:

You want a cure for gapes in chickens. I lost about seventy this past spring by this troublesome disease. I tried everything that could be thought of, and still they continued to die as though I had done nothing for them, until I tried the horse-hair remedy. Double the hair in the middle and twist it; open the chicken's mouth and introduce the doubled end of the hair into the windpipe, push the hair down as far as you can, twisting it at the same time; after it is down as far as it can be got, twist around by rolling it between your fingers and thumb several times, then withdraw it holding the mouth open all the time. This operation may be repeated several times, and you will be sure to remove the disease in the shape of a small red worm. I did not lose a single chicken after I commenced the use of the hair, and I think if all those raising chickens will take the trouble to try this plan they will lose no chickens by gapes.

Very respectfully,
A SUBSCRIBER.

Raleigh, N. C.

CULTURE OF THE SUMAC.

Editor of The Rural Carolinian:

Cannot some of your correspondents furnish a good practical article on the culture of the Sumac? We have several native species, all of which possess the *tannin* principle in nearly an equal degree, and I am inclined to think it can be made a far more profitable business for the poorer classes than gathering *blackberries.* C. L. HUNTER.

Lincoln County, N. C.

CROPS.

Editor of The Rural Carolinian:

Crops with us are very short. The drouth in this immediate section (on James River, Surry Co., Va.) has been more severe than that of last year. Corn and bacon will be high here next year. It is now, for corn $7.50 per barrel, bacon 25 cents per pound, eggs 25 cents, butter 40 cents. All provisions scarce. B. W. J.

THE WAGES QUESTION.

Editor of The Rural Carolinian:

Under the head of "Labor and Wages," in the June number, I notice a few remarks with which I am much pleased, though they do not go as far as I think the subject demands; and I beg a place for a few suggestions.

Standing wages I consider the only proper plan; but owing to the fluctuating price of cotton, I propose to make the price of cotton a basis for wages. Thus cotton 12½c., No. 1 hands, $10 00 per month and board. Cotton at 18¾c., same hands, $15 00 per month, etc. Now, with regard to lost time, as this is a source of great trouble, I will suggest a few stipulations in contracting.

1st. Time lost by actual sickness or other causes unavoidable on part of hireling, time to be charged at same rates of wages, with such arrangements for board and attention as may be agreed upon.

2d. Voluntary loss of time, without consent of proprietor, this, as it often happens, at a time when their services are worth much more than at other times, should be charged for at much higher rates, always high enough to deter hands from such loss of time.

W. M. R.

A NOBLE BENEFACTION.

Editor of The Rural Carolinian:

The Trustees of the Louisville Medical College, (Louisville, Ky.,) have created one of the most liberal and noble benefactions

ever conferred by a public institution upon any people. The trustees of this college have instituted one *Beneficiary Scholarship* for each *Congressional District* in the Southern and surrounding States. By this means very many poor but deserving young men will be enabled to obtain a thorough medical education. Any young man wishing to take advantage of this benefaction has only to write to the Representative of the Congressional District in which he resides, or to the President of the Medical Society of his State, or to Dr. E. S. Gaillard, Dean of the Faculty of the Louisville Medical College, Louisville, Ky., when he will receive full information of all that is necessary for him to do to secure one of these Scholarships. With proper and welcome delicacy the names of those who have secured the Beneficiary Scholarships, will be known only to the Dean of the Faculty. It is unnecessary to commend those who have established these noble Beneficiary Scholarships. Their act will bring them commendations wherever it is known. G.

HORSE DISTEMPER.

Editor of The Rural Carolinian:

I am not a veterenary surgeon, nor am I prepared to discourse pathologically upon the diseases of man or brutes, but I do profess to know what will cure *distemper* in a horse, if administered before the disease is too far advanced—say to supuration.

Bridle the horse and hold the reins short and tight. Tie up the left fore foot closely to the forearm to prevent his jumping. Then pour a teaspoonful of sweet oil in each ear. If not cured in twenty-four hours repeat the experiment, and a cure is certain. This is the prescription of one who has tried it successfully dozens of times. HORSEMAN.

Demopolis, Ala.

INQUIRIES AND ANSWERS.

D. E. M., Jacksonville, Florida, has been told by those who profess to know, that "*shoots from old roots* of the apple tree will not make bearing trees." Such shoots are not to be recommended for healthy trees, and unless grafted will reproduce the seedling and not the fruit, with which the original tree may have been grafted. The assertion that they will not bear, provided they grow and thrive, is undoubtedly an error.

—— The plant received from J. C. C., Dayton, Ala., is Barn-yard Grass, (*Panicum Cris-galli.*) It makes a heavy growth on moist rich soils, but is rather coarse for hay.

—— Has any one succeeded in producing plants from the Cinchona seeds distributed by us last winter? So far as we have heard, they failed to germinate.

——S. The immediate cause of *slobbers in horses*, is sometimes a local inflammation in the mouth or throat. When animals are attacked the food should be changed, and astringent gargles, such as vinegar, alum and honey, used frequently to wash the mouth. One or two drachms of tartar emetic daily sometimes prove useful in putting a stop to the discharge.

—— We want an article on *Jute*, giving details of its cultivation and preparation for market, from the pen of some one who can write from experience.

—— J. T., Aiken, S. C. The *beans* are new to us and we cannot tell from the seeds alone what the name of the plant may be. There would be no danger in testing their qualities as an edible. Ask Mr. Ravenel what they are.

—— *Commercial Fertilizers* are attracting more and more attention. We shall be pleased to have the results of experience with them during the past season. In some cases these results have been unfavorable. We wish to ascertain the cause of their failure in certain cases. How were they applied and in what quantities? and what were the conditions of soil, season and cultivation attending the experiments?

——P. Soot, with a little pulverized alum in it, sprinkled upon the plants while the dew is on will destroy the *green cabbage worm;* but the work must be thoroughly done, so as to reach the infested parts, which are generally the underside of the leaves.

——A. R. G. will derive little benefit from pounded oyster shells. Until burned, they are mere *carbonate of lime*, which is not properly a fertilizer. It is only when burned that they give us what we are accustomed to call lime, (*oxide of calcium,*) the carbonic acid being driven off by the heat. *Shell lime* is of undoubted value.

——M. *The Stump Puller*, a sketch of which you send, does not strike us as being suited to our wants. Our big pine stumps

would hardly yield to its moderate power—so at least it seems to us.

——A correspondent calls for a report from Mr. A. H. Johnson on the results of the use of the home-made fertilizer, described by him in our August number, (vol. I, p. 714.) Will he please give us the required information?

——D. Z. E. Jr., wants from some Florida correspondent an account of the county, crops, markets, means of transportation to New York, etc.

——J. B. M. wishes some one who has had experience with *sulky plough* to give the results through THE RURAL CAROLINIAN. Let us have a full investigation and discussion of the subject of improved implements.

——C., Cooper River, S. C., says:

"Tell your subscriber, W. M. H., North Santee, (for *Rice Checking*,) to turn his land about three inches deep in January, and let it alone until planting time. Harrow and plant. Just before planting apply one hundred pounds Charleston Phosphates to the acre, having his drains well cleaned, and not to put the water on until the plant will average four leaves high, and then not keep deep and not over fourteen days. When turned off, work and clean thoroughly. The harvest flow should be shallow and changed every four or five days. In changing allow the field to go dry before taking in more. If dry a day or two at every changing it will be all the better."

——"Holly Hill" wishes some one to give a particular description of what is called "*Chicken Cholera*," with a successful treatment, if any be known. The same correspondent suggests that "instead of offering such a variety of premiums for *breeds*, many of which are 'humbugs,' the Agricultural Societies would do well to offer a premium of twenty or twenty-five dollars for a remedy or preventive for this disease, by which a benefit would be conferred on poultry raisers."

LITERARY AND HOME DEPARTMENT.

THE MURILLO DE LA MERCED.

CHAPTER II.

The trance of surprise into which I had fallen while gazing was broken by the croaking voice of my hostess asking, in a really affectionate sort of way,—

"Ist you petter now, oder vill you hafe some more prantee?"

"Good God!" I cried, "what is the meaning of this?"

"De meanin'?—vhat of?"

"That bloody head—that lady?"

"Dat ist de laa-tee you ist to baint, an' dats de part of de shen'l'man I shpeak apout," she answered coolly. "Ve vants a Salome mit a Shone Paptist. Besser you doos *eem* so kevic as efer you can; he vont keep long, you knows."

She spoke of the dreadful object as indifferently as if she were a butcher's wife talking of mutton-chops.

"Great heavens! madam, I cannot, unless I am satisfied as to his fate."

She came to my front, and, I suppose, stared hard at me; then, after a pause, raised her gloved hand, and, shaking her forefinger in my face, spoke in a very decided manner—

"I tellt you as vee hafe our secret. You has gife your vort as you ast no kevestions. All vhat you has to do ist to baint de picture—dem ist our pargains; alle oder ting ist no peassiness of yours."

There could be no doubt of it—she was right. I glanced appealingly from her to the wonderful creature standing on the throne, but encountered only the same look of wistful sorrow which had so thrilled me already. I was about to remonstrate again.

"Hear me, madam. I——" but she interrupted me at once.

"Besser dan you talks you shticks to our pargain; an' you finds vee vont pe vorsser as ours."

I felt rather cowed. The resolute tone in which she spoke, the recollection of the way I had lately been handled, and the thick black veil which repelled all attempts to judge of the speaker by feature and expression, together, tended to impress my excited apprehension menacingly—to silence and subdue me. Besides, just then, at, I imagine, some unobserved signal, the beautiful young lady, lifting the salver with its livid burden, threw herself into a pose which, whether it had been previously studied, or was spontaneous, so perfectly satisfied my ideas of grace and meaning, that my art-enthusiasm soon superseded all other subjects and emotions.

It was under these circumstances that I commenced my work. As it grew upon the

canvas my ardor grew with it. Inspired by the unspeakable loveliness of my model, idea after idea rushed in upon me, each of a higher beauty than the last, but each of the last raising each of the former to its own glorious standard, till, when I threw down my port-crayon, what was as yet a mere outlined space, presented to my eyes a vision of form and expression, of glowing light and color, whose harmonies made my spirit faint with rapture.

As I stood absorbed contemplating my sketch, the wheezy voice of my hostess broke upon my reverie,—

"Soh you has doon enough for dis vonce, ferry goot! You finds drough dere," pointing to one of the doors, "your zimmer, your pet-room—eferyting gomfortable. Dere ist von gallerie, vhenefer you likes to valk, vhere you can stresh your lecks. S'pose you goes dere now, an' vee has in ten minnits subber for you here."

Supper!—my thoughts reverted to that loathsome object in the salver. "I have been nervously ill lately," I said; "I fear I should be unable to eat anything with that—that, you know, before me." I pointed as I spoke. Her voice was pitched in the highest tones of surprise as she replied,—

"Curi-os! das is ja curi-os! Nefers meint; vhen you cooms pack, you finds eem not here. Vee puts em down in de coldt to make eem keep."

I had scarcely sickened so much at the sight itself as I did now at the way she spoke of it; and without further parley, with one parting look at the Salome, rushed away.

As soon as I had passed out of the studio I found myself in the gallery. From this passage, as it really was, a door opened into my bedroom. There, a cursory glance showed me, everything was perfectly comfortable. I gladly availed myself the few minutes allowed to try—by plunging my head and hands into cold water, and by brushing the former till it smarted—to freshen up my faculties, and clear somewhat the confusion of my mind, before returning. When I did so I found beautiful lady and bloody salver both gone, and only the duenna there, as I benamed her to myself on the spot, standing beside a table set out with delicacies.

"In de dum-vaiter ist de vines—you finds dem dere," she said, pointing to it. "Vee vishes you goot abbetite. You sitz an' you shmokes here, oder you goes to your pet as mo'sh as efer you likes." She appeared to be going, but returned to say, in a most amiable manner: "Eef you ist not kevite gomfortable, oder you vants someting, you shust tells me in do mornen', an' vee does eat. Gute nacht, schlafen sie wohl;" and she left me alone.

Instinctively certain of its uselessness, I made no attempt to discover if there were any means of escape; but instead, with a pipe and some remarkable claret for aids—for I could eat nothing—I set myself to serious reflection. Events had occurred so rapidly, each more extraordinary than the others, every one so unprecedented in my experience, and, running through all, were circumstances so incongruous that, after vainly trying to think them over with deliberation and reason out their consequences, I gave up the attempt, and yielded myself to the fascination of one overpowering idea. All other facts and every adjunct connected with them fell away, retired, and ranged themselves behind and far beyond it—veiled themselves in a haze of remoteness, which I ceased to endeavor to penetrate; while this, coming to the foreground, blazed on my imagination in its own effulgence. Beauty, such as I had seen to-night, I had never seen before; nor had it entered into my heart that it might be. While delineating it, I had, so to speak, absorbed it—face and form, feature and limb—the sorrow-fraught look of the violet-lidded eyes, and tender seriousness of the curved lip—the lines of the rounded cheek, and the dimpled chin crowned as with a rosebud—the pearly hues of its polished skin enriched with traceries of delicate blue—the bright shimmering of the waves of its auburn hair—its grace, in every gesture making "poetry of motion,"—and, as the eastern drug subdues its votary, I found it master all my other faculties, exciting and leaving in me but one power—to dream.

I made no attempt, at least then, to resist, but, I fear, rather instigated its tyranny, by what, for one of my abstemious habits and depressed state of health, were over-copious draughts of wine, and unusual smokings-out of many pipes. I may as well confess the consequences. I am unable to recollect any succeeding circumstances, till, on the following morning, I started up from heavy sleep, wide awake, with an aching head, a feverish trickling through all my veins, and a feeling of remorse oppressing me as for some vague crime I had committed. The luxury of a cold bath and a rapid walk up and down the outside passage to promote circulation, however, soon restored tension to my relaxed nerves, and set me up again in body and spirit. As I became calmer, the idea of the night before recurred to my mind, but not in such overpowering force as then. Another feeling arose to share its intensity—curiosity. All my endeavors to gratify it were, however, futile. The door leading to the studio, and both the others in the passage, were locked. The window of my bedroom opened only at the top, and its lower half was blocked by an immovable shutter. Standing on a chair and looking out of the upper part, I could see nothing but the tops of evergreens growing thickly beneath, and the trunks and leafless

branches of a close plantation beyond. Suddenly there recurred to me the story of the midwife, who, brought blindfold to the bedside of a lady, was enabled afterwards to identify the scene of a murder, by producing a slip of cloth, which, unobserved, she had cut from the hangings. The idea of the bloodless head, I know not how, had faded from my attention; but now, as I reflected, the possibility of its being the result of a dreadful crime revived with terrible distinctness, and set me in action. I began at once to make private marks on the walls and furniture, by which, in case of need, I could identify the place, as well as produce evidence to conviction to satisfy others. While pursuing this work, a church clock, not very remote, struck eight. I paused to count the beats, and was resuming my furtive task, when a loud rap at my door sent the blood rushing to my heart, as if I had been caught in some horrible nefarious action. The knock was repeated before I could recover self-possession to answer or open. It was my hostess, the duenna, veiled and as imperviously disguised as before. My reflections upon her manners, language, and the character indicated by them, together with the possibility that she might be a murderess, or at least implicated with others in an abominable crime, made this woman intensely odious to me. Nothing, however, could be more kind than the manner, almost motherly, in which she bade me: "Guten morgen," hoped I had slept well, and congratulated me on being an early riser.

"Dere ist your preakfass," she said, when we got into the studio. "You tinks dere ist anytings more as you vants?"

I glanced at the table—heavens! what means for a feast! Tea, coffee, toast, butter, eggs, slices of delicate beef, a fowl, a tongue, anchovies, and—a bottle of maraschino. All I could reply was to thank her for such liberal provision. Then it was arranged that, my meal finished, I should retire for half an hour to walk, and, if I liked, smoke in the gallery; meanwhile, everything would be prepared in the studio for my work.

"You doos de head of the shen'l'-mans fust," suggested the lady. "Besser you doos eem fust."

"Yes, yes, certainly—by all means," I replied, with repressed loathing.

"Yah," she wheezed out, "yah, eet is besser."

Although I had eaten nothing since yesterday afternoon, and despite the provocatives to appetite before me, it was with difficulty I managed to make a very poor meal—I had such a choky sensation in my throat. "The part of the gentleman" this time had nothing to do with producing it—it was something very different. Before me was the sketch I had made a few hours ago, and the reflex of the vision that had then enchanted me resumed again, now, all its power of fascination over my fancy. I felt the danger of yielding to it, and manfully overcame the temptation of maraschino, although I was in exactly that state of perilous excitement which stimulates the desire to increase itself. These feelings only made my task, on returning to the studio from my walk, more repugnant. I had not, however, proceeded far in it before my æsthetic perceptions enabled me to regard the object I was painting *per se*. Through and beyond the mere beauty of the features the face had acquired and retained a nobleness and dignity from the mysterious expression and unfathomable calm of death. As, too, I wrought on the wonders of color on the sad brow, cheek, and lip—the blendings of brown and purples beneath the sunken eyes, with the play and shimmer of light along the pale forehead and arched nose, over the sable hair and beard, and down among the flashing points of the embossed silver on to the sanguine drops below—revealed themselves, their contrasts and harmonies, against the equally wondrous shadows; in beauty—the power to feel which must, I suppose, be born with one, but which, however it comes, I thank heaven I have.

Once engaged in it, I became thoroughly absorbed in my work, and never paused till, having done all I could do for the present, I stopped to contemplate its effect; when that duenna, who I began to believe was born to shake my nerves, who seemed to live and move and have her being in mystery, startled me, by asking, in her thick, choky tones, "Don't you vants your dinner?"

She was sitting behind me, very composedly, in one chair, with her feet resting upon another.

"You doos eem ferry pe-u-ti-fool! eet ist vonderfool! Doos you not vant your dinner? You fainst avay agin eef you doos not hafe your dinner."

"Bless my soul!" I could not help exclaiming, "how long have you been here?"

"A-a-ch! efer so long."

"Did you come in at the door?" I asked confusedly.

"Gewiss—ya'es—drough der tore. When ist you reaty fore your dinner?"

"Why, madam, I can do no more for the present, so when ——"

"Vell, I tinks dat," she interrupted me by saying, and getting up to go; "den you goes an vashes yourselp; an' in von viertel—das ist, kevarter von hour—you cooms pack, an' you finds your dinner alle nice."

What shallow creatures we are! for myself, at least, I may confess as much. For I was immensely pleased by the duenna's admiration of what I had done; principally, perhaps, because she expressed what was in my own thought, though I had not dared to say as much to myself.

Upon my return to the studio I found a a table profusely spread with luxuries, for at least one-half of which I could find no names in my experience. I may as well mention here, that all the time this adventure lasted my board was supplied with such delicious profusion, so exquisitely prepared, that its remembrance has made me a rather fastidious liver ever since. Without being conscious of it while at work, I had become much exhausted. It told upon me now, I suppose; for after dinner, before getting through half a cigar, I dropped off into a sound sleep. For how long, I know not; but when I awoke—silence, mystery, and startling surprise again!—the table was cleared, the black-veiled lady was seated before my picture, and there, upon the throne, stood that vision of beauty in all her transcendent loveliness, with those eyes of hers, as full as before of appealing sadness, fixed wistfully upon mine. Greatly abashed, and too much dazed to be perfectly self-possessed, I began to address to her a confused apology for my want of vigilance, when, starting up and interposing between us, the duenna shouted at me in her vulgar German and shrillest tones—

"Halt des maul, gleich!" She seemed suddenly roused into uncontrollable rage, for she stamped her foot and actually threatened me with her clenched hand. "Vhat fore you dares shpeak zu de Brincess?—she no unterstant von vort you shpeaks; vhen you hafe so bromise, how dares you?"

I could not help being somewhat astounded by the threatening and impertinent way in which I was spoken to, but greatly more by the disclosure of the one lady's rank through the inadvertent wrath of the other. I hastened to humble myself and explain. Fortunately, the duenna was as placable as she was easily excited. And the Princess, in self-possessed dignity, appearing quite unconscious of anything disagreeable passing. I set my palette afresh and began work. Long and late, my whole soul engrossed in the beauty of my subject and the rapture of my art, I wrought. My limbs trembled from exhaustion, but still more through emotion. Singular! during all those hours, calm, still as a statue, gaining relief at long intervals by merely shifting from one small foot to the other—the old distressful expression always predominent on her perfect features—silent, watchful, her deep, earnest looks continually on mine, the Princess stood, untiringly, as no model I ever knew could stand. In the ardor of my occupation, I totally forgot a proper consideration for her. By no gesture, no impatient breath even, did she suggest weariness. It was only when I felt my own fatigue that it flashed upon me how much more she required relief and rest than I did. It was to express this, with regret for my thoughtlessness, that, as I laid aside palette and brushes, I bowed to her repentantly and low. By heaven! she understood me, for she smiled and blushed—such a blush! such a smile! It was the first time—it was the only time for many a year that I saw them; but for many a year that smile and that blush were as spells upon my destiny.

It is needless, as it would be tedious recapitulation, to describe the days which followed this, the first of my adventure. None of them was marked by variety, or any circumstance of interest enough to require particular notice, irrelevantly to the great mystery that enveloped all. I finished the Baptist's head, and the mortal model disappeared. Then, morning, noon, and night, I worked on in the light of the lustrous Princess; but ever also in the shadow of her black-veiled duenna, or whatever she was; and she, at the conclusion of every day's work, regularly praised my performance. My work was rapidly approaching completeness. Together with the beauty of its mysterious subject, it exercised upon me a power of fascination which subjugated all my other feelings. Doubt, suspicion, alarm, even inquisitiveness, became dormant under its influence. I knew I was in a dream—a dream not indeed without pain; but that pain was, for the present, so interwoven with delight, that I dreaded to awaken from it into ordinary life; for then, I knew, not the warp alone, but the woof too with it, must be destroyed.

In all the many days I never heard another voice than the duenna's. She never addressed the Princess, and the Princess, it appeared to me, was disdainfully silent to her. Was she disdainful as well to me? could she be, while hour after hour out of her wondrous eyes, she poured her intense soul into mine? Yet she took no notice of my labors. I could not but be conscious that this effort of mine surpassed all my previous efforts—that I was working under inspiration. But the Princess never once glanced at her image on my canvas—not a gesture, not a play of feature, ever showed that she took the slightest interest in it. Feeling that my art was the only possible means by which I could ever hope to approach her, except for a rather sophistical suggestion of, I suppose, my vanity, that the dignity of her rank prescribed a severe self-restraint, an abnegation of any such vulgar emotion as curiosity—and, above all, a most consolatory idea of her taking opportunity, when I was absent, to inspect my work, as I frequently found my easel displaced from the position in which I had left it—I think her indifference would have broken my heart.

In how many ways has the old story been told? I mean not to tell it once more in mine—suffice it, the old irrepressible story

revived itself in me. Could I have helped it? No, and no again! I had as much power to save myself as a wretch tied hand and foot in mid-rapid of a cataract has; once launched the rest belonged to fate. As it was, confinement, the labor, the tension upon my nerves, and over-wrought feelings, were all more or less telling upon me. My glass showed me again the haggard cheeks with hectic spots set in ghastly white, which three years before had required as a specific Italy. Every day I ate less; but, parched and burning, I drank more. Every night was more restless than the last. All night, and then all day, growing, broadening, heavy, heavier; dark, darker; a feeling like despair—like!—it was despair sank down upon my heart. But I finished my work.

"You hafe doon?—you hafe doon mit es, alle-zugedder?" the duenna asked, as fainting, I let palette and brushes fall, and sank into a chair.

"Altogether, madam, I should do harm by doing more."

"Von-derfool! Es ist pe-u-tifool, as I tells you pefore. Nefer meint dat now. You feels not well—you ist ill?" she inquired, in a tone of great concern and kindness.

"I am ashamed to say," I answered "that I feel very faint."

"A-ah! den I shust gifs you a lee-dle someting as does you mo'osh goot—ferry mo'osh goot." I was too sunk in lassitude to observe what she did, but passively swallowed the contents of a liqueur-glass which she brought me.

I remember a delicious feeling, like sudden relief from great pain, following immediately after taking the dose—whatever it was. I have another, but subsequent, recollection of a state of exquisite repose, during which, like the fitful creations of a dream, unknown people came, moved about me, and spoke in whispers without conveying to my understanding anything intelligible, or, with one exception, producing surprise at their appearance. The exception was a person whom I seemed distinctly to recognize as a gentleman who had been in the habit of frequently coming to watch me at work while I was studying in the Alcazar at Seville, but with whom I had never exchanged a word. The dull astonishment with which I regarded him for being there grew duller every minute, until I became incapable of thinking about it—of thinking about anything;—rest!—only rest!

I came to myself as awakening from a sleep of many confused dreams. I was at my Newman street apartments, lying in bed. I took for granted it was night; for a dull light, whose source was carefully screened from my eyes, just enabled one to distinguish objects and recognize the place. A hand, with its fingers upon my wrist, had hold of one of mine, and, peering anxiously at me, was the kind face of my dear friend Morris Blake, M.R.C.S.

"O blessed Moses, and ten times ten!" I heard him whisper softly to himself.

"Hollo, Morris!—is this you?"

"Phillilloo! So you're come up out o' that, eh? An' you know me—do you, Charley?"

"Know you, Morris!—why not?"

"Ah, why not?—that's it. Never mind now, though. Only be still and quiet—that's a good little man. Here's a dhrink for you."

I was parched with thirst, and tried to rise to take the effervescing draught he was mixing—I could not lift my head from the pillow.

It would be to no purpose describing my condition. Thanks to Blake's skill, under the Almighty's favor, I was past the crisis of brain fever. Still, the greatest care, with quiet above all things, was necessary for my safety and restoration. Blake was to take me into the country as soon as I was strong enough to bear the journey. Meanwhile he resolutely refused to answer any of my inquiries, as well as permission for me to speak a word, except about common and immediate things.

"Be good, now, Charley, my man," he said, in his way. "By-en'-by we'll want discoorse over our liquer an' dhudeens, when I exhibit 'bacca and punch for tonics. You may fire away thin like a debatin' society."

We had been together nearly a month at the foot of Box Hill, in the pleasant vale of Dorking, before Blake, while "exhibiting" the above tonics for his own behoof, but rigidly forbidding them to me, thought proper to remove all restrictions from our perfect freedom of conversation.

"After puttin' out o' sight, in twelve hours, three pounds o' mutton chops, an' sivin imperial pints o' itter beer, Charley—you gourmong; besides flinging twice up to the top o' the hill like a shammy kid with a flea in his ear, I think I may take you Co. in any agreeable sort o' discoorse we likes now. What was the dhrink you'd been havin' the night you was brought home?"

It was only by an effort that I could recall the circumstances. "Drink, Morris!" I replied; "I took nothing but a little claret and water."

"Don't you call to mind gettin' dhrunk?"

"I!—drunk?"

"Dhrunk."

"No," I indignantly protested; Drunk, indeed! I was very ill, but drank nothing—Oh, I remember now——"

"Ha, ha! What, Charley?"

"Only a liqueur-glass of something that was given me when I was fainting."

"I'd just like to know what company you was kapin'—wid your black famales and princesses—for they hocussed you, Charley."

"Good heavens, Blake! What do you mean?"

"Just that. The men that brought you home, an' tucked you away in your crib, said you'd brought on a fit o' blinking at dinner, by lookin' too hard at the decanters—the bla-guards? Was you robbed?"

"Robbed—nonsense!"

"You wasn't? I thought, though, we'd find you cleaned out o' every scuraick, till we seen you'd got money an' your watch upon you. Here's a parcel they left. I'd have giv it you before, only there's something so mighty mysterious on it, that if you hadn't had a brain-fever it ought to give you one anyhow, sure!"

Blake produced a small weighty parcel covered with strong brown paper, and firmly bound round with pack-thread; but before handing it to me, he read from a label pasted across one side—the characters Roman, in red ink,—

"Remember your Word—Honor. Forget Everything—Silence."

"It's mighty like one of the scrawls they hould up to the audience at Astley's," he added, reflectively. "'He dies at sunrise.' I've seen that same myself."

Meanwhile, in considerable agitation, I cut open the parcel. It contained two roulcaux, with seventy-five bright new sovereigns in each. I could not help muttering, "You finds as ve vont pe vorsser as our pargains."

"Oh, thin, by Jabers!" exclaimed Morris, "there must be a ra'al royal princess in it to the fore, after all."

His astonishment surpassed mine. Naturally enough, he grew intensely inquisitive. In the wanderings of delirium I had revealed so much, that to tell him from first to last, the whole story, was but to put in order the incidents, with every one of which he was already well acquainted. In his discretion, as well as in the soundness of his judgment, I could put the firmest reliance. Moreover, his keen insight into the characters of men, and his large acquaintance with the world, together with his affectionate friendship for myself, expressly calculated him to be my adviser, now I so urgently wanted counsel. For the mystery of the dead man's head had recurred to, and lay like a crime upon, my conscience—only the heavier for remembrance of my word pledged to secrecy, when by no possibility could I have anticipated that it was given to conceal a fact so horribly suspicious. My mind was soon made up, and I recounted to him all my adventure. He listened without once interrupting me; but I knew by the fierce way he pulled at his pipe, that he was not a little excited.

"And now, Morris," I asked, when my tale was done, "what does it behoove me to do?"

"Nothing," he answered, emphatically; "Beca'se, Charley, in the first place, as that respectable black female Trojan told you, 'it's no business of yours;' and in the second, it would be of no use to try."

[*To be continued.*]

WOMAN CULTURE.

Dr. J. W. Jones, horticultural editor of *The Reconstructed Farmer*, has some very timely hints on the physical education of young ladies—the cultivation of our beautiful human flowers. We make brief extracts:

LITTLE, DELICATE, TENDER WOMEN.

The men of America love pretty, little, delicate, tender women. The American women live so as to be, and look pretty, little, delicate and tender. The mothers either make their daughters to suit the taste of the men, or the men have learned themselves to love such women as we have. At any rate, they mutually love and get married, and in a few years thereafter, the pretty, little, delicate, tender wife sickens, pales, and turns into a sick, nervous woman to be nursed and doctored the rest of her life, which, in many cases, is a brief space of time. Mothers, you must rear your daughters differently, so as to make them strong, robust, ruddy-cheeked; with able bodies; with strong arms, hands and legs and feet; rear them to work, eat and sleep; rear them for a real life—a life of labor and love.

WHAT MUST BE DONE?

Our girls are reared like the hot-house plant, and like it, wither at the first winter's blast. How few healthy women we have. We all see the wrong and feel it, but how change for the better? Is there no help for this state of things? There is, and our people must be educated to it. It must be done by degrees, and with great discretion and the best judgment. The error first to correct is the "sentiment" and the "fashion." This must be done by the mothers, fathers, and our *teachers*. The young lady can do nothing—she is helpless. She dare not stand up in society against the "common sentiment," and do what is called unlady-like, though she be following her most chaste maiden instinct. Our mothers must see to it, that their children have healthy and pleasant exercise in open air, together with profitable employment at home. Teach them to be always usefully employed, and consider no labor that is needed to be done, "unlady-like."

HORTICULTURE FOR GIRLS.

To the teachers, we suggest that they have a horticultural department in all the boarding schools and colleges, where the girls can walk and work, and take fresh air, exercise, and

recreation, and form habits of industry, and fit themselves for real practical life. In addition to the walk, if you please, let them spend an hour, morning and evening, in the garden, each having her tract of land or portion of work to do and see after, under the supervision of a competent instructor, who should, from time to time, give lectures on gardening, botany and domestic economy.

"See them in the morning,
Brushing, with hasty steps, the dew away."

They are gone to the garden; one digging about the plants, another training the tender shoot, another planting the seed, another pruning the vine, another gathering the fruits of her labor.

This exercise is worth more than the dance, the ride or the walk. It calls into play every muscle, and begets inquiries concerning nature and nature's laws. The breakfast bell rings—see how they run—hear how they laugh—they are glad—they are hungry.

DECORATED.

BY "OLD MORTALITY."

By the Way-side, in Georgia.

The print of feet are worn away!
The star-lit grasses come!
The lips that praise, the lips that pray,
Are, like the dead man,—DUMB.

The world is wreathed with other bloom!
Shall the sweet summer shed
Its living radiance o'er a tomb,
With this blank legend—DEAD?

What light of life *can* reach to-day,
This "UNKNOWN" dust beneath?
What world of roses warm this gray,
Cold hillock with a wreath!

FORGOT! Beneath our Father's face
His "star-crossed" legions lie!
ANOTHER ROSEBUD! lest His Grace
Forsake *us* ERE we die!

Columbus, Georgia. F. O. TICKNOR.

WINTER EVENINGS.

Boys, take care how you spend your winter evenings. You have it in your hands to do much for yourselves during these moments of leisure. The use that you make of your time now while you are young will tell much upon your future well-being. If you pass your nights and rainy days in idleness and trifling you will grow up into ignorant and *useless* men, except so far as mere brute force may be able to make you useful. But pass your spare moments with books—good books—in trying to improve your minds and hearts, and you will, ere long, be able to take an honorable place in society as workers and thinkers of the age. Does not each one of you wish to become a good and useful man? Begin now to lay the foundation of a broad and comprehensive education. But, with all your getting, get goodness of heart.

B. W. JONES.

RECIPES.

SWEET POTATO CUSTARD.—Boil four large sweet potatoes and mash them smoothly; add while hot two large spoonsful of butter and a little salt. Take four eggs and beat light, a half pound of sugar, teaspoonful of ground spice, stir in with the potatoes and thin with milk or cream; make a rich pie crust and roll it thin; put on ordinary pie plates, fill with the custard and bake brown.

FAMILY GLUE.—Crack up the glue and put it in a bottle; add to it common whiskey; shake up, cork tight, and in three or four days it can be used. It requires no heating; will keep for almost any length of time, and it is at all times ready to use, except in the coldest weather, when it will require warming. It must be kept tight so that the whiskey will not evaporate. The usual cork stopper should not be used. It will become clogged. A tin stopper, covering the bottle, but fitting as closely as possible, must be used.

TO COOK BEETS.—Beets, when sweet, and not withered, are very good baked, in a covered vessel, at least three hours, or until they yield to the pressure of the fingers. Then put them into cold water until the skin will slip off readily. They are good enough without dressing.

PUMPKIN CHIPS.—Peel a sweet dry pumpkin and clear it of the seeds and strings. Plane it into shavings with a small jack-plane; in shaving it do not cross the grain of the pumpkin, but with it; otherwise the shavings will break into little pieces. Weigh the shavings and allow one pound of white sugar to every pound of pumpkin. Squeeze the juice of six lemons for every ten pounds of pumpkin.

LAMP WICKS.—Few know that a lamp wick which is equally as good as those we buy, may be made out of Canton flannel. Take a strip three times as wide as you wish the wick to be, and as long as you like. Fold it with the fleecy side in, so that it will have three thicknesses, and baste or overcaste it up the side.

APPLE WATER.—Roast three or four good apples, carefully preserving all the juice; put them in a pitcher and pour on a quart of boiling water. Drink when cold.

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1 column	15	28	40	60	100	back cover, 50 per
¾ column	12	22	30	50	90	cent. added to rates.
½ column	10	18	25	40	75	No advertisements
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10 " " " 16.
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Moneys must be sent by Draft, Postoffice Order, Registered Letter, or Express, at our risk, but at the sender's expense.

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To enable our subscribers to preserve THE RURAL CAROLINIAN, we will bind their numbers in full cloth, gilt back and sides, so as to make a handsome volume for $1, or we will forward the cases for 75 cents. Or, we will bind in half leather, library style, for $1 25 per volume.

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WALKER, EVANS & COGSWELL,
Charleston, S. C.

FARM AND GARDEN CALENDAR FOR NOVEMBER.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance north or south of this place must make necessary allowances for difference in the seasons.

AGRICULTURAL OPERATIONS.

Cotton picking should be finished up this month. Let the ginning and baling be done with great care. It will pay to give extra attention to these operations.

—— If your *Wheat* is not already in, it should now be sown without delay. *Rye*, *Winter Oats* and *Barley* must also be got in at once. Have your ground well manured and prepared, and sow as evenly as possible. Make up your mind to produce a crop of at least twenty bushels to the acre and as much more as possible.

—— Drill in *Rye* on well manured land for feeding green during winter and early spring; or sow broadcast for a winter pasture.

—— *Ditching*, *draining*, *stump-pulling* and farm improvements generally should be made the order of the day whenever no more urgent work presses.

GARDEN WORK.

If disposed to take a little risk from frost, plant from the tenth to the fifteenth of this month, in the latitude of Charleston, and southward, your first crop of *peas*. Brown's Dwarf Marrowfat, or some other medium grower will be most likely to give you a crop. The smaller dwarfs, like Tom Thumb and McLean's Little Gem, will come into blossom too soon, and be more likely to be cut off. Toward the end of the month, or the first week in December, plant your quick growing dwarfs, of which the Little Gem is the best. Select, if possible, for your peas, ground that is rich from previous manuring, so as to require little if any additional manure. Manuring at the time of planting, gives too rank a growth of vine with proportionally less pods. Peas should be planted thicker than is customary with most persons. We plant in double rows, setting sticks between them. The rows may be two feet apart for the dwarfest kinds and from three to four for the larger growing varieties.

——You may continue to transplant cabbages for an early spring crop. Hoe frequently, and keep free from weeds those planted last month. Sow seeds for a later crop. The plants will, however, need some protection during the winter. A cold-frame, as described in February number, (Vol. I, page 287,) is a very useful garden fixture for this and other purposes.

——*Turnips* may be planted with some risk that they will get killed out by the freezes that are liable to occur in December and January, but if they live through, they will come in in good time in the spring. A little straw, leaves or dry grass strown over them may save the crop.

——*Onion sets* and plants from seed, if not already planted, should now be got out at once.

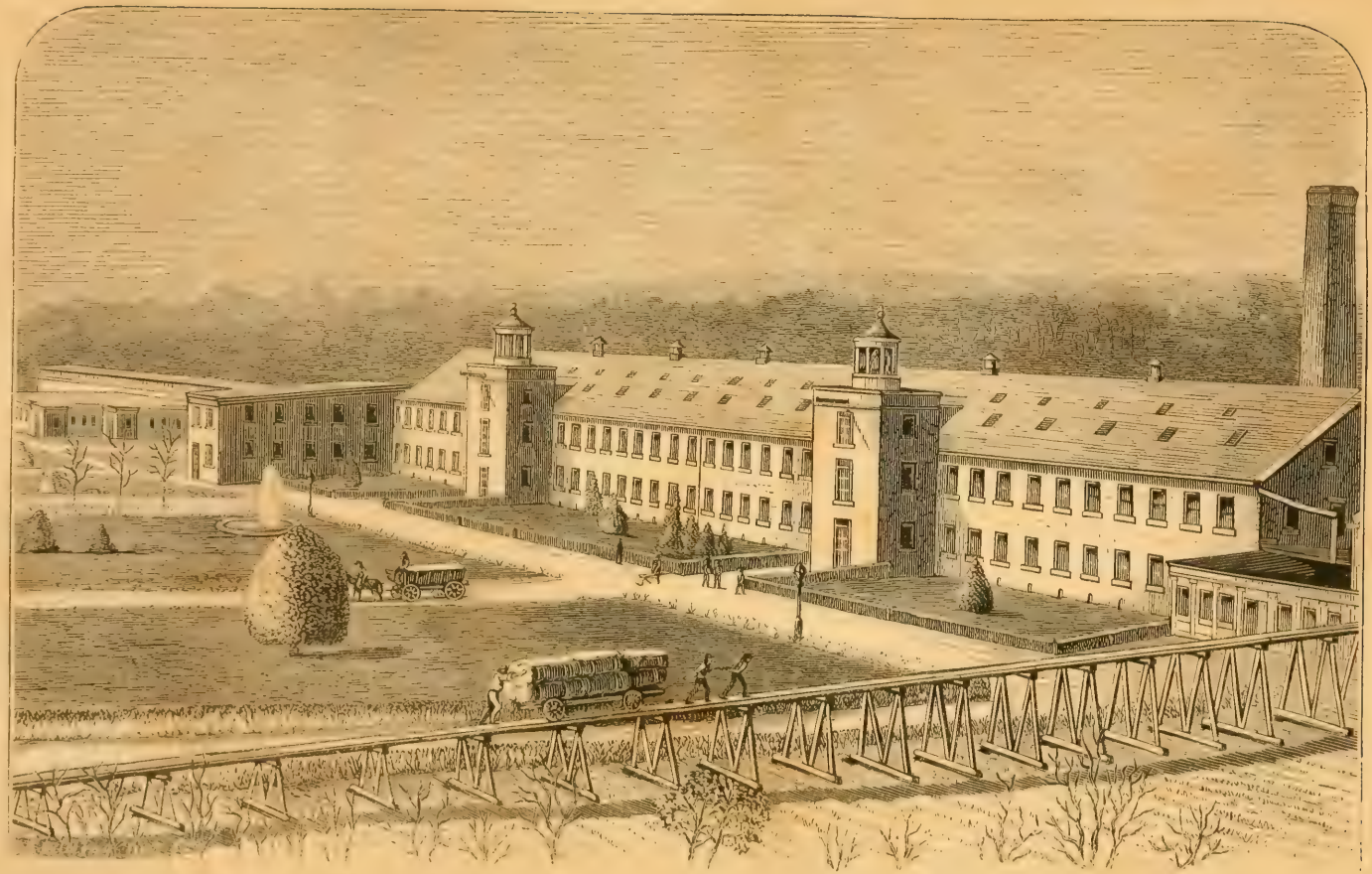
——*Carrots* and *Beets* may be sown, but the same remarks apply to them as to turnips. Sow *Spinach* if required for a succession.

——*Lettuce* and *Radishes* may be sown in a warm border. Continue to transplant Lettuce.

——Those who like the English or *Mazagan Bean* may plant during this month, and they will give good crops in early spring. Plant in rows two feet apart and six inches apart in the row.

——In the fruit garden, you may prune your trees and vines and prepare for (and plant if convenient) an additional number as needed. *Strawberries* may still be planted, and will, perhaps, do quite as well as those set out earlier. See instructions in Volume I, page 102. *Raspberries* may be transplanted any time during this and the next month. The Black Cap varieties and the Philadelphia are sure to suceeed.

——In the *flower garden*, your beds should be worked over and tender plants removed to the green-house or the parlor. Plant tuberose, tulip, amaryllis, Hyacinth, lily, and other hardy bulbs. Divide dahlia roots. Sweet peas and China asters may be sown.



Graniteville Cotton Factory.—Engraved for the Rural Carolinian.

THE

RURAL CAROLINIAN.

Vol. II.] DECEMBER, 1870. [No. III.

The Maintenance of Fertility in Soils.

SECOND ARTICLE.

Colonel D. Wyatt Aiken:

While it is incontestably true that neither liming, subsoiling, "green-cropping," nor any other stimulative processes or manures, are more than temporary expedients, whether severally or jointly employed; while the dung-producing system of culture is truly as you express it, only robbing Peter to pay Paul; and while to hope for an adequate supply of "commercial manures," (as now understood and exorbitantly paid for,) for general use in agriculture, would be leaning on a very fragile reed: yet it by no means follows that the employment of these processes, as well as many others, is not to be highly recommended in farm and plantation economy; provided only that their character as auxiliaries to culture, temporary loans, or drafts upon the capital, be fully understood, and no vain attempt made to substitute them *permanently* in place of the only rational principle—that of the circulation of soil-ingredients. Especially should they be used for the purpose of raising the "condition" of the soil to that standard of high fertility, which must form the starting point, as just explained, for the introduction of the rational method of yearly returns. Next to the senseless cry that "manuring will not pay," there is no fallacy so universally practiced, and so fatal to success, as that of cultivating too much land—cultivating it badly, of course; manuring it not at all; and raising, in consequence, half or quarter crops, of wretched quality, and at a ruinous cost. These are, most especially, the cases to which the remedies, above referred to, should be applied. Men exceptionally gifted, like Mr. Dickson, with both the capital, and the knowledge and executive capacity required for its proper use, may take a short cut, and within a few years transfer to their soil so much of the stored fertility of the South sea islands and phosphate beds, as to raise three bales of cotton per acre; but were the community generally to attempt to follow his example

in this respect, not only would guano and phosphates soon rise beyond the reach of ordinary mortals, but many would signally fail to realize the results attained by the shining light of "intense culture," in whose success the *man* has, probably, counted as much as the *manure.* Southern agriculture owes much to Mr. Dickson, for having practically and irrefutably demonstrated what but too many so-called practical men were unwilling to believe: that manuring *will* pay, under existing circumstances, even when carried to such an extraordinary extent as he has done. As an energetic Southern planter he has assuredly suggested *one* "practical" method by which sterility can be prevented! And were it equally "*practicable*" for the community at large, and for all time to come, we need have asked no better.

But if Mr. Dickson is, perhaps, more liberal in the use of "bought manures" than the generality of mortals could afford to be, the same is not true of other agents which have borne a most essential part in securing success, and which are, or ought to be, equally within the reach of every tiller of the soil. The constant use of the subsoil plough, (securing a soil fifteen inches deep instead of five,) of the fallow combined with "green-cropping," of most thorough preparation; and last but not least, the scrupulous return to the soil of all produce except the cotton lint—such a system, I say, regularly carried out, would maintain a fair state of productiveness for a very long, if not indefinite period, if cotton lint were the only crop actually exported from the plantation.

There is, probably, no other crop so little exhaustive as one of *cotton lint;* few as much so as one of *cotton seed plus lint.* The latter carries with it, on an average, forty-two pounds of soil ingredients per bale; the former, *four* pounds at most!

So small a quantity of available nutriment will, in any soil of good native fertility, be annually developed by the fallow; and its restoration might, for a long time, be neglected with impunity—at least ten times as long as in case the cotton seed is also withdrawn. In other words, if (as has been the case in Mississippi prairie soils,) a field when fresh was capable of producing crops of cotton for thirty years, the seed and lint being both withdrawn: it would have held out for ten times thirty, *i. e. 300 years,* if the lint alone had, from the outset, been removed. Experience confirms this *à priori* conclusion; cotton fields so treated have, in the course of thirty to forty years, shown no sensible diminution of productiveness. But when, as has usually been done, corn succeeds cotton, withdrawing from twenty to thirty pounds of soil ingredients per acre, without return: exhaustion has, of course, followed, but much later than if corn alone had been planted.

Here, then, is another practical method for the energetic Southern planter to maintain fertility; based on the almost insignificant exhaustion following the production of a crop of cotton lint. Put your man and mule on a ten-acre lot of land able to bear a dozen crops at least without manure; give the pair five acres for their living, (if they need so much,) while faithfully returning every particle of manure and offal *from the outset.* Pitch the other five

acres in cotton, well tended, and *all but the lint regularly returned to the soil;* and if after the lapse of a century, soil, man and mule be not in prime condition, and with money to spare for a rainy day, it will—not be their fault.

I merely state the naked principle here; in detail, of course, there should have been rotation between the produce and the cotton plot; full replacement of the lint ingredients should also have been made, green crops turned in, marl used, etc.; maintaining fertility *ad infinitum.*

From the nature of his crop, the cotton planter is a peculiarly favored individual as regards the maintenance of his soil. The grain-producer may well, at first sight, shrink from the large amount of soil ingredients he is called on to replace; but the cotton-grower has only an insignificant return to make, and is scarcely excusable if he fails to do so.

But to take a more expanded view of the subject, let us, in conclusion, consider separately the three principal cases which, as regards the quality of the soil, may occur in practice.

First, should the farmer settle on land which is either fresh and naturally rich enough to fulfil the condition previously referred to, or has been artificially made so, he can *maintain* its fertility by simply restoring to it, in an available shape, (manure, phosphates, guano, ashes, etc.,) all the soil ingredients contained in the produce sold off the land; while those of all produce consumed on the premises are scrupulously returned to the land in the form of manure, litter, muck, ashes, etc. This must be done regularly and consistently, all the while having due regard to the proper physical condition of the soil, and by thorough tillage, rotation, the turning in of green crops, liming, marling, etc., maintaining its thriftiness, and striving to increase the amount of available, circulating soil-ingredients.

The amount of the latter sold off the soil in each crop, is readily ascertained from existing data; and so, with proper municipal or State regulations, *should be* the composition of the manures offered for sale, wherein the purchaser is now so often grossly imposed upon.

The Japanese peasant knows to a nicety how large a spoonful of his night-soil-manure will grow a beet, melon, or turnip: so many turnips, so many spoonfuls. The all-important object of the maintenance of fertility is well worth the trouble of keeping a regular debit and credit account of the soil-ingredients, which after all are the *true* capital, while money is only its representative.

So much for the planter or farmer who, in buying rich land, of course pays a high price therefor. Now let us consider, secondly, the case of one buying land whose fertility, whether native or artificial, is *not* up to the standard at which a simple annual return of soil-ingredients withdrawn by crops, will steadily maintain its productiveness. There is a good deal of such land—far more than of the other sort; it is cheaper, too, in the purchase, but many times the difference in price must often be expended to bring it up to the former standard, viz: that of being able to produce, unmanured, a succession of, say a dozen crops.

The improvement may, according to circumstances, be effected in a variety of ways, *but it should be effected, as it will not pay to cultivate poor soil.* And here it is that all the various temporary expedients often mentioned, may be most legitimately, effectually, and profitably employed. *Local circumstances,* as well as the *kind of soil,* must determine which of these should have the preference, (unless capital enables the owner to take the short cut in the Dickson style.) But this is frequently the merest guesswork, unless an agricultural survey by a competent person has determined the general character of the soil, its native resources, peculiarities, and the existing natural facilities for improvement. An adjacent marl or gypsum bed may render the matter easy and inexpensive, or the soil may be such that marling, liming, or any other kind of stimulation may be useless, or worse than useless. Subsoiling, with green crops or muck turned under, may be all that is needed, or subsoiling may effectually ruin the land. Drainage is rarely amiss, yet there are soils which it would be a work of supererogation to drain; or while draining might be beneficial, yet the same amount of money expended in a different way might pay better. In short, it is in these cases that practical tact, assisted by science, is most pressingly and frequently needed; and here is the rock upon which the fortune of many an honest but uneducated worker is daily shipwrecked. There is no magic formula or royal road to soil improvement which will *always* reach the end, unless it is "lots of stable manure!" The only trouble is how to get it. Yet if, as is frequently the case, a man owns a large tract of pasture or grass land unfit for culture *as it is,* it may be best to fall back upon the old system, viz: raise plenty of cattle for the sake of their manure, and thus concentrate the fertility of a large area upon a small tract, *until its productiveness has risen to the point from which thereafter, simple annual returns will maintain it indefinitely.* The "dung-producing system" is in very many cases an excellent and sometimes the only expedient to attain the adequate fertilization of *one* portion of land for profitable culture, while the *other* must, for the time being, take care of itself until better communications, increased value of land, discovery of natural manure beds, or cheapening of artificial ones, shall render its improvement profitably possible.

The same principles apply, substantially, to the third case—that of *worn-out soils.* Here, as in the case just considered, everything depends on circumstances, unless the owner can afford to fertilize them by main strength—sheer force of capital. Some soils, once exhausted, become incapable of profitable resuscitation under any ordinary circumstances. Others—and amongst them is a very large portion of our upland loam soils—of good native resources, which have merely been deprived of their immediately available plant-food by exhaustive culture with shallow tillage, require merely the fallow and stimulation, to recover, if not their original thriftiness, at least a capability of responding bountifully to a rational system of culture, and of being thereby gradually raised to that degree of productiveness which is the needful preliminary condition to the maintenance of fertility by mere annual returns of ingredients withdrawn.

Fortunately for us, there exist in the South wide tracts underlaid by deposits of marls of various kinds; containing not merely lime, but a large supply of all, or some, of the other elements of fertility. In districts which are so fortunate as to possess these mines of agricultural wealth, the resuscitation of worn soils, as well as the raising of naturally inferior soils to the proper standard of fertility, can generally be effected by alternate dressings of marl, and turning of green crops, or what is equivalent, muck, forest leaves, or even pine straw.

But for the proper utilization of such beds of natural manure, as well as for their discovery, a properly executed agricultural survey is indispensable. All marls are not adapted to all soils; their selection is often a matter, not only of great moment, but of considerable difficulty; involving a previous knowledge, not only of the composition of the marl, but also of the soil, its depth, position, drainage, etc., as well a judicious weighing of other means of improvement which accidents of location, communication, etc., may render simultaneously practicable.

The fact is, that there are few professions requiring so much varied knowledge and business tact, as that of the rational agriculturist, under the ever-varying conditions of climate, soil, markets, communication, and a hundred other things, which are especially characteristic of this country. And taking this fact into consideration, so far from wondering why so many agriculturists fail of full success, we should rather wonder that, among so many blind led on by blinder leaders, calling themselves "practical men" *par excellence*, there should be so many who *do* succeed. Much of this is due, as I have already remarked, to the wide margin for profit and loss which sparse population and naturally productive soils allow us. But these are advantages which will pass away; and the most pressingly needful thing we have to do, if we would prevent the occurrence of a disastrous period of agricultural decadence, is the diffusion of sound *principles* among our agriculturists; in other words, the proper education of our youth for *this*, as for any other profession. And that they may be enabled to properly apply these principles without exacting of them too much detailed knowledge, there is required, I repeat, a properly made *agricultural survey*. It is not enough to write promiscuous articles on plantation economy, to be published in agricultural journals; not even a volume of four hundred pages, whether stimulating and intensely interesting, or rather dry and difficult of digestion, can do more than point out the path; to keep and follow which, under a great variety of circumstances, requires a certain cultivation and knowledge of principles, which early education alone can ordinarily bestow.

EUG. W. HILGARD.

University of Mississippi, September, 1870.

A large area of bog land, on the Edisto River, supposed to be utterly worthless, has been discovered to be an extensive peat bed of immense value. It is a cheap and superior fuel.

The Oat Crop—Its Importance to the South.

From actual experiments made by me, I am satisfied that the oat crop, next to cotton, is the most valuable product of the South; as it not only requires less labor to cultivate than corn, but is less exhaustive to the land; in fact is a great improvement to it so far as that invaluable principle, humus, is concerned; while corn, like cotton, is a humus destroying plant. [By humus I mean organic vegetable matter, as it is nothing but that in a rotted or decomposed state.]

Cotton being the great staple of the South, he is the best farmer who makes the most with the least expense, and at the same time improves his land. All the corn, fodder, oats, peas and meat that a cotton planter makes is only to feed his mules and his laborers to make cotton with. It becomes, then, a vital question, how can he make the most horse food with the least labor and the smallest draught upon the fertility of his land? This is a very important question, now that labor is so scarce and so high in the cotton States.

During the last season I made enough oats to last six mules four months, with an outlay of about $26 for seed, ploughing in and cutting, not to estimate the cotton seed, which more than paid for itself in the increased vegetable matter, and consequently enrichment of the soil. The same amount of corn and fodder made on the land would have cost four times as much, the cotton seed would have been a clear loss, half of it being evaporated by the process of heating and killing the germ; the other half lost in the clean-culture system necessary to make corn.

But is not the oat crop very uncertain, particularly as to getting a stand? Not by any means upon our plan. By applying a good coating of cotton seed, as much as you have to spare, from fifteen to fifty bushels to the acre, sowing the seed with them, and turning all in together with a turning shovel, you may sow any time from October to February, and never fear about a stand. The depth of the seed, together with the warmth produced by the fermentation and rotting of the cotton seed, prevents the freezes from killing them out while in the sprout; and the vigor given to the roots and plants by the manure prevents any freezing out afterward. Upon this plan also the whole of the nitrogen and other volatile matters are saved in the soil; while the plan of heating cotton seed, and applying to the corn in the spring, evolves a large per cent. of these important gases.

The advantages of this plan to the land over that of the cultivation of corn is immense. For fifteen months the plough does not interfere with the soil. Every living plant is allowed to grow, and mature, and decay, except the oats, which you cut and take from it, leaving all the roots and stubble behind, which are luxuriant from the effects of the cotton seed as are the weeds and grass, which come up in the spring. The amount of humus actually created for the next cotton crop would quadruple that left after corn. And when it

is remembered that, as a general rule, our worn-out soils require but three great principles to be restored to them, viz: humus, nitrogen, and phosphoric acid, in order to make them productive, and when the two latter are furnished in every good fertilizer, while the former cannot be, the wisdom of a plan which makes the most humus to make cotton, and the most horse food, with the least labor, is apparent to every intelligent mind.

I throw out these suggestions to the planters of the South that they may act upon them if they choose, for I am well convinced that it is the only plan by which they can improve their lands and gather repeated crops of cotton from them. The rust, which of late years is acting so disastrously, is owing, I doubt not, greatly to the lack of humus in the soil. We must then either rest our lands more or sow them in small grains. Corn and cotton forms a bad rotation, as both of them are humus-destroying plants. I have no doubt that, upon the plan above indicated, a planter may gradually improve his land, and gather a remunerative crop every year.

The effect of cotton seed upon oats is more remarkable than even on corn and wheat. By sowing a large acreage of oats, less corn would be requisite, and any good ammoniated fertilizer will supply the place of the cotton seed for corn, and in case of a drouth produce better results. The oats is a healthier food for horses and mules during the summer than corn, as I have well assured myself, and will sustain them about as well. The black oat is the hardiest and much the most productive.

Sparta, Ga., October 20th. E. M. PENDLETON.

Fairs and their Object.

"Were you at the Atlanta Fair?" "Oh, you should have been at the Atlanta Fair!" Such are the greetings of inquiry and assurance uttered by thousands of lips during the past month. I do not hesitate to repeat the assurance to all of our readers, as I am able to answer the first inquiry affirmatively. I was there, and do not think the Executive Committee themselves could have desired or anticipated a more perfect success. Every demand by exhibitors of all kinds of articles was fully met, and both labor and money had been lavishly expended to furnish the supply. In April last I visited those grounds to see the stump puller tested in the very first act of preparation; to-day Oglethorpe Park is an ornament to the city, and has within its enclosure at least one hundred thousand dollars worth of substantial improvments, a monument of the energy and enterprise of those who designed and completed them. The management of the fair was most complete. Efficient officers superintended the various departments, and contributions were so nicely classified that the visitor had only to ask for any, the most minute article, and without delay or difficulty it was shown him. Every department was full; and creditably filled too. No man at all observant would have attended that fair without profit to himself.

But beyond this can it be said, that the object and purpose of agricultural and mechanical fairs was subserved in the Atlanta exhibition? I think it questionable. The planter, in search of good stock, could not have gone amiss, for breeders of every description, from the fleet racer to the adipose Chester, and the fly-wheels of machinery, were made to flutter here, yonder and everywhere, both by steam and horse power. The brawny arm of the white man too, as well as the muscle of the negro, was made to test the quality of this, that and the other plough; while the good things of life, prepared by the tiny fingers of the daughters of the South, were in profuse exhibition. But it was none of these individually, nor all of them collectively, that "drew the crowd;" any more than did the "learned pig" or the "two headed negro girl."

The tournament and the "trot" were the absorbing ideas; and the demoralizing tendency of both is such as to crush rather than to develop the legitimate object of fairs. Horsemanship is a manly sport, and should be encouraged; but what evidence of skilful riding is there in darting at full speed along a straight course, thrusting this side, then that, at a ring or figure-head? And what interest is added to the rider or the occasion by bedecking him in all the fish-scale gewgaws of modern times, and dubbing him "Knight of the Golden Circle," or some other cognomen equally absurd? A graceful rider in the saddle, manifesting his control over the animal upon which he sits, is a picture of life eminently interesting; but riders in a tournament seldom exhibit control over the horse or grace in the saddle. To object to tournaments because they are dangerous amusements may appear puerile; but the fatal results so commonly attendant upon these sports justifies the objection. A bold, reckless man, not at all expert as a horseman, enters the list, and his ambition, increased by the accompanying excitement, induces him to attempt exploits uncalled for; and an accident, sometimes fatal, is the consequence. If practice made perfect in these contests, and the "knights" proved by their successful thrusts, that failure was the exception to the general rule, then the contest might indeed be admired; but unfortunately, in all the tournaments I have witnessed, if the "knight" perchance "took the ring" he was cheered lustily for his good luck; and where one performed the successive feats expected of him, scores failed entirely to evince their skill in thrusts or horsemanship.

That an *agricultural* and *mechanical* society should, at one of its Fairs, charge an additional fee, (as some of them have done,) for witnessing the tournament, is another evidence that the legitimate object of Fairs, (which is the industrial development of the country,) is made subservient to the popular amusements of the day. Grant that tournaments are innocent, they have seldom benefited society, and their results are like their object—aimless.

As much, however, cannot be said of "The Course." When a match is made the very sight of the animals, whether in harness or under the saddle, whether matched to trot or for speed, provokes a preference of one over

another of the contestants, the mere expression of which elicits from by-standers a challenge to bet. As an admirer of fine stock and a breeder of thoroughbreds, it is not necessary to have my horses tested on the race-course to prove their value. Racing and training of racers is a profession *sui generis*, and does not belong to Fairs, and yet the premium lists, which are simply invitations of monied value to compete at the Fairs, always indicate that the race is the prominent feature of the occasion. The $2,500 purse offered at Atlanta, brought competitors from New York, Missouri, and other States north, who had an eye single to that prize, and when I saw an old Yankee jockey, who had perhaps driven or ridden as many races as he had hairs on his head, parading the course and proffering to stake his own horse againt the field for $100, I felt that demoralization creep over me which must be experienced on such occasions by every reflecting planter. No man on the grounds enjoyed the race more than I, and I always expect to enjoy such sports, but I prefer seeing them elsewhere than on the Fair Grounds.

The question preëminently important to the South at the present time, is that of LABOR. The implements of husbandry are almost perfect, and machinery enables man to increase his productive power, in some instances, an hundred fold, and yet the demand for efficient labor exceeds the supply. It becomes us then to dignify labor; to teach the youth of the land that the plough handle should be his weapon of warfare. Do tournaments and horse-racing at our Fairs inculcate such ideas? When the bugle blast announces the hour for the race, thousands rush to the course to see the contest, but when the ploughing match is announced, the Chairman has often to search for those who, with himself, are to award the prize. Such men as Watt and Brinly, and others, of the South, who have labored long, thought much, and spent heavily to perfect that implement, without which the world would starve, receive but little encouragemant at our Fairs. But the jockey who will bet his "bottom dollar" on his nag is offered a small fortune just to come along and add to the interest of the occasion. Perhaps if a $500 premium were offered for the most expert ploughman under twenty-one years of age, or for the plough that would pulverize the deepest and widest furrow, slice with the least force, as tested by the dynamometer, the intense interest might be reversed. Will not some of our Executive Committees test it another season?

D. WYATT AIKEN.

The Market System of Charleston.

[The following notes will explain themselves. Believing that the subject is one of general interest and importance, we take pleasure in complying with Mr. Capron's request, with thanks to our correspondent who has so kindly enabled us to do so. We need only add, that Mr. Vardell, being himself a truck-farmer, and perfectly acquainted with our market, is fully competent to answer correctly the questions propounded by our excellent Commissioner of Agriculture.—ED.]

WASHINGTON, D. C., September 3, 1870.

Editor of The Rural Carolinian:

DEAR SIR: I desire to collect information concerning the market systems of our principal cities, with especial regard to abuses in the usages of commission dealers, and other middle-men, and respectfully ask attention to the following points:

1. Number of days in the week, and hours of the day, in which farmers are permitted to sell from their wagons.

2. Amount of space at the market houses, and on the streets, which they are allowed to occupy.

3. Prices obtained by middle-men or hucksters, compared with the rates allowed by them to producers.

4. The bearing of prevalent usages of commission-men upon the interests of producers.

5. Amount of license (if any) required of farmers; and other municipal restrictions or requirements in regard to their sales.

An article in your paper giving an account of the characteristic features of the markets of your city, and bearing on the above particulars, would be a valuable contribution to the object which I have in view. Will you have the kindness to consider the subject, and, in case you publish such an article, forward to me a *marked* copy of the paper containing it?

Yours, very respectfully, HORACE CAPRON,
Commissioner.

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CHARLESTON, S. C., October 19, 1870.

D. H. Jacques, Esq., Editor of The Rural Carolinian:

MY DEAR SIR: Complying with your request, I beg leave to enclose answers to queries from Hon. Horace Capron, Commissioner of Agriculture. I shall take pleasure at any time in assisting you to such information as may come within the scope of this Society.

Very respectfully, W. G. VARDELL,
Chairman Executive Committee of the Agricultural Society of South Carolina.

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The queries handed to me refer to the sale of farmers' produce only, and to this feature I shall confine myself.

1. Farmers may sell produce from their wagons or carts on any day of the week, (Sundays excepted,) from ten o'clock in the forenoon until sunset, from the first day of October to the first day of May; and from nine o'clock in the forenoon until sunset, from the first day of May to first of October. There is a fine of twenty dollars for selling on Sunday.

2. The amount of space allowed at the regular market for each vendor is a stall measuring five feet by ten, for which the occupant pays fifty cents per week in advance, entitling the holder to occupancy for one week only. Transient persons are charged twelve and a half cents per day. Failure of payment in advance, the person so offending is expelled from the market, and

not allowed to sell articles, or offer any for sale until the payment is made. Every person is obliged to occupy the stand assigned him, and if found selling at or occupying a stand elsewhere, he is subjected to a penalty of five dollars for each and every offence, and for each and every day, or part of day, on which such offence is committed.

A person may hire more than one stall, provided there be a surplus; but should there be a demand for the extra stall, he is compelled to vacate and confine himself to one stand.

No person is allowed to occupy any space on the streets, except at the market, there only during market hours. They must take such stands as the clerk of the market designates, and are not allowed to leave such stand until they have either sold or taken away the produce brought by them for sale. Any person refusing to comply with these requirements is liable to a fine of five dollars. No one is allowed to offer vegetables that are stale or wilted, under penalty of forfeiting them.

Our market hours are from sunrise until eleven A. M., from the first day of June, until the last day of September; and from sunrise to twelve M., from the first day of October to the last day of May.

3. We have properly no middle-men or brokers dealing in vegetables. The farmer sells his produce himself, either to the consumer or to the huckster. Our hucksters are principally negro and colored women; they generally charge from one to two hundred per cent. advance. To my mind this is the most serious evil we labor under here. The producer should sell directly to the consumer, increasing consumption and cultivating demand by saving the advance added by the huckster. I have noted that attention has been called to this fact in larger markets than our own, resulting, however, from different causes.

4. Our commission merchants charge ten per cent. on guaranteed sales—seven per cent. not guaranteed. In shipping produce they transact the whole business of shipping, correspondence, etc.

As far as my own experience extends, there is no usage prevalent amongst *our* commission merchants that I have found prejudicial to the farmer's interest.

Suggestive Experiments in Cotton Culture.

Deeply impressed with the conviction that our agriculture must regenerate our desolated State, I have, since the conquest, been more concerned on this subject than ever before, although the extent of my agricultural operations has been greatly reduced.

Always a planter, yet absorbed in my profession, and never residing on my plantation, I have, hitherto, paid little attention to plantation details. Since the war, from a necessity enforced by reduced circumstances, I have converted into a farm some sixteen acres around my residence in the sand hills,

outside of my yards and lawns, where I had cultivated native trees, etc. I not only found this too expensive for these hard times, and scarce and unreliable labor, but found that with neglect nature was converting what was intended for ornament into a deformity.

The change to a farm has improved appearances, and has been profitable. Thus, last year, on fourteen acres of cotton, cultivated at a cost of three hundred dollars, ($300,) the result was seven bales, (400 pounds each,) worth, when sold, $700; netting $400 profit. This year, on sixteen acres, the result will be ten to twelve bales, worth probably $600 to $650, cultivated at an expense of $300, giving a profit of from $300 to $350; a small affair, it is true, but a demonstration that a *small farm,* on these lands even, can be profitably cultivated, even with cotton at fifteen cents. Now my plantation crop of cotton is on better land, the working of the crop has been better and more judiciously done, the crop is fair but not so good. Why? The little farm of sixteen acres was always worked over rapidly and promptly. My carriage horses would easily plough over it in three days; the hired man and two or three extra hands would hoe it over in four or five days, so that it was worked rapidly when young, and although it did not come up until the 30th day of May, it had been ploughed and hoed each four times by the 20th July, after which time nothing was ever done to it except to run the hoes hastily and cursorily over it, chopping out any grass that might appear.

The chief object of this article, however, is to make a crude suggestion or two, which may induce reflection, experiment, examination and argument, which will benefit us all. Not having been practically engaged in plantation management, I had supposed that the cotton plant, as also the orange tree, formed an exception to the rule in vegetable life, as indeed in animal life also, and carried on at the same time the process of flowering and fruiting—closer observation has satisfied me that this *inconsistency* does not exist, and I desire to throw out my views so that if I am incorrect superior observation and skill may remove my error.

The growth of the cotton stalk, the form, the flower and the green boll, require a thin, watery, active sap. The hardening of the stalk and bolls, the production of the cotton fibre, etc., require a thick, gummy, slow sap. Can both exist in the same plant? Certainly not—the plant has but one circulation, and which cannot produce substances so different as the cotton fibre, as dry as gun cotton, and the tender flower and young boll almost as wet as water. This would seem to be reasonable as a theory. Now as to practical observation: During the two seasons just past, rust, so-called, has been almost universal. It is not rust; it is entirely different in appearance and effect. Rust attacks the leaves—may be called a cutaneous disease, and if checked by external applications complete health is restored to the plant; if neglected, it will progress in its course and invade the general system. I have, on two occasions, demonstrated this by applications of salt to cotton having red rust, the result being in both cases an entire cure, reinstated vigor to the plant, and a full supply of new leaves, etc., to the plant.

The blight which has generally prevailed for two years is an exhaustion, or a complete maturity of the plant; the roots and stalk are affected first, and the leaves, immature fruit, etc., perish as the result of inability of the roots to afford, and the stalk to conduct fit nutriment. Now observation furnishes both the affirmative and negative proof of this fact. This disease (?) appears always in the soil in which you expect it—sandy or worn clay lands, where there is an absence of humus. Again, it only appears where the wood of the plant has hardened, and much of its fruit is matured. Now, the negative proof is as strong, and also proves, when considered closely, that the cotton is not an exception to the vegetable rule of "seed-time and harvest." In rich lands with abundance of humus this disease (?) does not appear. The plant continues to grow; new leaves, forms and flowers continue to put forth, *but the bolls of the same age as those long since opened, plucked, ginned, packed, sold and possibly manufactured,* still hang on the stalk, *green and watery.*

I tried some experiments this season which it seems to me prove that the cotton plant does not carry on the two processes of flowering and fruiting both, to any considerable extent, at the same time. I have a little lot of two and a half acres adjoining my back yard and garden; thin, sandy soil, but with a pretty good clay near the surface. It was first planted in 1869, in corn, subsoiled and heavily manured with cotton seed; the result being about twenty bushels of corn to the acre. In the fall I manured with stable manure, and sowed barley for pasture. Two milch cows and calves, and occasionally my carriage horses, were pastured on it all winter. On tenth of May I turned in the barley and planted Dickson cotton with a Dow Law Planter, having manured with two hundred and fifty pounds of Langston's Cotton Food to the acre. The land was as dry as it could be. Not a seed sprouted until a good warm rain on 26th May. On the 30th of May the cotton all came up together. It was well and briskly worked, and looked and promised beautifully. On 31st July it was growing, I thought, too much, and I had it topped. I measured a single stalk; nothing exceptional about it, but selected it as standing just where I entered the lot, all immediately around it looking about as well. It measured, at sixty-one days of age, sixty-two inches in height. It had on it ninety-four forms, blooms and bolls—of which twenty-two were safe bolls—being just at the entrance of the lot and very near my house. I observed this plant almost every day; noticed no shedding of any consequence; some mornings would notice a cast form, but nothing of consequence. Observed a very considerable addition of new forms, and on the 15th of August counted it again, expecting to find at least one hundred and twenty or one hundred and thirty forms, etc., on it. There were only ninety-six, showing that it had cast about as many as it had acquired. Of those on it forty-five were safe bolls. In about five days I counted it again—it had only eighty; in about five days, again, it had seventy; in a few days more only sixty; and on the 5th September it had only forty-seven, of which forty-six were safe. One only added since the

15th August, and that one easily recognized, as it was a three-fourth grown boll, on one of the little offshoots thrown out where the cotton had been topped. This result induced me to count all the stalks near this, and I found them containing from forty to fifty-two grown bolls, all evidently of about the same age, showing that since early in August no fruit had adhered or matured, though it had bloomed heavily during the first three weeks of that month; and the plants had seemed healthful all the time.

Now, Mr. Editor, the answer to this shedding, by some, is that the constant rains in August made the blooms, etc., fall off; but this cannot be so, for in the same lot, in the flatter, lower portions, where there was abundant humus, the plants continued to put forth blooms and to complete the formation of bolls, there being now on the stalks in such places bolls of all sizes, from the full-grown boll to that from which the flower has just been cast; the only difference being as to the old bolls that they do not open well, and many have rotted.

It strikes me that if there is error in these views experience ought to point them out; but in conversation I have not found anything to controvert them. If they are correct, valuable lessons can be deduced; prominent among them being that, if the cotton plant cannot have its season for maturing fruit prolonged, our policy of cultivating and manuring should be such as will force maturity as early as possible, and crowd as much fruiting into a short space of time as can be done. HOBKIRK.

Camden, S. C., 1870.

Gathering and Preparing Sumac for Market.

The Sumac business, which started from very small beginnings, seems to be growing quite rapidly in importance, and will, I think, become one of the established industries of our section.

The Sumac belongs to the *Rhus* family, a genus comprising, it is said, thirty-three species, some of which are to be found in almost every quarter of the globe. About seven of these are native to America, all of which may be used in tanning. Two of these, viz: the *Rhus vernix* and *Rhus radicans*, are highly poisonous, and there is some danger of getting poisoned in gathering the common Sumac when wet with dew or rains, especially if one has any scars or sores upon his hands.

Sumac leaves should be stripped about the close of summer while yet green, but any time from July to time of first frost will answer, as its turning red does not injure it. The leaf is the part desired, but for expedition the stems upon which the leaves grow may be pulled, all of which will be bought if well cured. Gather into bags or baskets, and cure in the shade, spreading it thinly over the ground, or, better, upon an open flooring. Do not mix sand or other matter or leaves with it; and protect from rains while curing. If cured upon a large scale, a good plan would be to spread in the shade upon lawns, or else-

where, turning it over two or three times daily with pitchforks. It must be *thoroughly* cured, and is thought to be so when the *stems* break short and freely. It may be pressed into bales, (which should be done when thoroughly dry, *i. e.* not damp with dew,) with a common hay press, but should be covered with some sort of coarse bagging to prevent loss by transportation.

A good article, prepared as above, will sell readily at $1.50 per hundred pounds. It is in demand, with no fears of overstocking the market. To women, children, and aged persons, who are unequal to heavier duties, it offers another means of earning an honest penny, which a diversified industry is bringing to the notice of our people. I hope some more experienced pen will give us something better upon this subject. B. W. JONES.

Cottage Home, Surry, Va.

Is Rust in Wheat a Fungoid Growth?

"Our good friend 'G.' may be right, but we had supposed it a well established fact, that rust in wheat is a fungoid growth, the seeds of which may be disseminated with the grain."—ED.

I must beg leave to differ with Mr. Editor on this point. The fact has never been established satisfactorily to my mind, that rust can be disseminated with the grain, or that any preparation of the seed can prevent rust.

Was not the Editor thinking of smut?

Smut can be prevented by soaking in bluestone solution, in copperas solution, in strong brine, in ley, or simply washing and rolling in lime. I have been growing wheat for twenty-eight years, and have never had a handful of smut in it. Some of my neighbors (who don't believe in soaking) have bought seed of me because "I hadn't smut wheat," but I have noticed after a year or two, their wheat was as badly smutted as ever. One of them said to me that "he had tried soaking in bluestone, and it didn't do any good." Perhaps you didn't make it strong enough? "Oh, yes, I did; you could see the bluestone all over the ground." That solved the mystery. Bluestone is not easily dissolved, and should either be pounded fine or dissolved in boiling water. I prefer salt brine and rolling in lime to any other process, however, but care should be taken not to allow the wheat to remain too long in the brine, for fear of affecting the germ. It is said, too, that the brine will destroy the germ of cheat and cockle.

But "*revenons à nos moutons*"—rust. I remember, when a boy, to have heard an old farmer say, "that after an April shower, when the sun broke out hot, you might stand in a wheat field and hear the stalks pop open." That was *old*-fashioned rust, which attacked the stalk directly, and split it open, and it generally made its appearance in just such weather as old fogy said, and the sporules would affect the contiguous stalks and soon spread over the field. The blight was rapid and ruinous. An idea prevailed that rust spread from briars and poke stalks—a very good prejudice, as it led to

the cleaning up of fence corners and briar patches—but, doubtless, the same cause which produced rust in the wheat, produced it in the briars and poke stalks. I am satisfied, however, that the soil had something to do with it. A friend of mine (an excellent farmer, too, albeit a poke-stalk believer) told me that he had noticed "that the rust invariably broke out in a part of his field where a large poke stalk grew in a stump. He had the stump burned up and never had any more rust." Argal—the poke stalk.

I have noticed that rust was always most prevalent in cold soils, where the clay was near the surface, and that it made its appearance oftenest about stumps, where the soil had not been well broken. There is no doubt, however, but the rust is worse in some seasons than others, and that soils deficient in vegetable matter are most subject to it.

But the old-fashioned rust has gone up. We now have a modern rust of a very different type. It made its appearance about fifteen years ago, and first attacked the oat on the blade, soon sapping its vitality. It soon began to make its mark on the wheat, (on the blade,) but for several years did not do much damage. Every year, however, it seems to come a little earlier, and to do more mischief. I have not been able to discover any difference as regards soils with the variety of rust. I have seen it on all soils equally disastrous. It is worse in some seasons than others. This, I believe, is generally conceded. There is no preparation of the seed which will arrest it, and one variety of seed as well as another seems equally subject to it, so far as my experience goes.

The red or yellow oat, so far, has proved itself rust-proof, but I have seen no wheat free from its attacks.

A good preparation of the soil and early sowing, I believe, will prove to be the only preventive.

I am satisfied that the falling off in the wheat crop generally, is attributable to rust. Albeit most farmers will tell you rust on the blade don't hurt wheat. G.

Pineapples and Tropical Ices.

I have had the pleasure of receiving and of reading, with great interest the copy of The Rural Carolinian you were kind enough to send me.

I note your request for information, which may be of value to your neighbors, in regard to the productions of this region, and shall be pleased to comply with the same at an early opportunity.

Although within the tropical zone, our altitude (13,000 feet above the sea level) gives us a very cold and unproductive climate. Neither wheat nor barley ripen here. Trees, save a few withered, unproductive shrubs, are unknown; and potatoes, horse beans, onions and carrots are scantily grown in the nearer valleys.

Our chief supplies are brought many leagues, on mules, donkeys or *llamas*,

from the valleys below, increasing in warmth and richness of vegetation with each league travelled.

So steep is the declination from this, one of the highest inhabited portions of the Andes, that but a few hours ride from where I write, you may enjoy ices, flavored with the pineapple, banana, lemon or orange, sweetened with sugar and congealed with ice, all the products of the same estate.

The provinces to the north and east of La Paz are as fruitful as this is barren. In the torrid climate of Yungas and Santa Cruz the soil yields luxuriantly of tobacco, coffee, cacao, cotton, coca, (the Indian substitute for tobacco,) sugar, rice, cochineal, vanilla, India rubber, and woods of surpassing beauty for cabinet and building purposes. The want of roads, save mule and llama paths of breakneck description, the apathy of the Indian, brutalized by three centuries of oppression, and the frequent revolutionary outbreaks which have retarded progress, are the only reasons why this should not be one of the wealthiest and most productive of the South American Republics.

Colonel Geo. E. Church, of New York, has obtained a concession for the navigation of the Bolivian tributaries of the Amazon, and is now in London in furtherance of that end. This once accomplished, one of the most productive regions in the world, and comparatively unknown, will be thrown open, and give employment and wealth to thousands. Be it remembered that nine-tenths of all the so-called *Peruvian* Bark, the source of quinine, is the product of Bolivia. Having no seaport (save Cobija on the border of a desert) her exports go through Peru on the west, Brazil and the Argentine Republic on the east, and she nominally holds no place among the exporting nations of the world, while possessing a *Potosi* and the only *forests* of *Cinchona Calisaya* in the world.

CHARLES S. RAND.

Consulate of the United States, La Paz, Bolivia, Sept. 16th, 1870.

Can we Make Crops in Spite of Drouth?

That deep ploughing and liberal fertilizing, followed by good or bad seasons, are better than the old system, we agree.

Not that the roots penetrate to the depth of the subsoiling, but that the land being left loose, and in a condition to retain moisture, as also to receive it at night, when the dampness, dew or no dew, penetrates and feeds the plant. The roots of most plants as well as trees, that feed the trunk, are near the surface. The peach tree, the dogwood, and many others we might mention, grow near the surface. So with most of the plants, except cotton. It has a tap root, like the pine, to support against storms, as also to support the fruit. The cotton roots, the feeders, are near the surface, and will come to the surface as it were to breathe.

And on land that overflows, when a deposit of mud is left upon the land, closing the pores of the land, the growth stops at once, the stalk looks sickly and withered, and will not recover until the sun and wind crack the

ground and let the air in. Then the roots first start off to grow, come to the surface, and the weed assumes a healthy appearance again; and if the weather remains favorable, will soon be on its way to a healthy growing condition. Melons, squashes, and all of the vines, grape and the like, grow near the surface.

To ensure a corn crop against drouth, such as we have generally, we should plant land capable of retaining moisture, well prepared, planted early, with sufficient manure of some kind to push it on, so as to have it in silk before the drouth comes on. If once in this condition, it will fill, the first filling of good, large grains. July is generally the driest month in the year. We cannot get along without corn. It is from this alone most farmers must rely, for dry food, to winter horses and cattle. We must raise some hogs. Most farmers have no land for hay. Poor upland will not do to rely upon for hay, and to plant it in peas will not pay. Were all, or nearly all, to plant as much corn as they could manure from the stable and lot, plant it early, ordinarily they would make a good crop. Then the cotton crop would be diminished to our advantage, for the advance in price would be about the same in actual cash.

I know The Rural Carolinian is not a religious paper, yet I hope it is not an infidel one; and that by the heading "Crops in Spite of Drouth," was not meant that we could build a tower to secure us against God's judgment.

We do have drouths that would defeat all the scientific skill of man. In April, 1845, it began in the 15th and lasted until the 18th of August here. In 1830 it began on the 23d of May, and lasted here until the 18th August, and above here began earlier. A drouth beginning in June and lasting until in August, often happens; and when attended with windy, hot weather, would be too severe for any mode of culture. A failure would follow.

Whence the diseased condition of everything? The spot in the apple; the blight in fruit of all kinds? The caterpillar, the boll-worm, the diseases in cattle, hogs, horses, and chickens? The fowls throughout this section have nearly all died. Some had not a crower left. Cast your eye into Europe, look at our own political affairs. All confusion, and all looking to man for deliverance. Corruption met with corruption. Fighting fire with fire, or the devil against the devil. Can these things last?

Colonel Thomas said in Convention last June, we have no hope but what we ourselves can create! Think of it! WM. H. REIFF.

Agricultural Miscellany.

ONE WAY OF IMPROVING LAND.

It perhaps has occurred but to few farmers to employ the roving herds of summer at manure-making. It may be done thus:

Select a spot adjoining an outside fence, and enclose it well on the three remaining sides. Haul leaves from the woods, muck from ponds or swamps,

or anything that will rot into a good manure in ten or twelve months, and spread over this lot three or four inches deep. If there are not several trees in this lot, make shelters for shade by placing poles upon forks, putting a floor of rails across these poles, and cover thickly with pine-tags. Enclose large pieces of ground alum salt in boxes having a hole in their tops large enough for cattle to get their tongues in conveniently. Place these boxes firmly upon posts about over the lot. Make a gap in the outside fence that everybody's cattle that come along may walk in. As soon as they find out the salt this lot will become a grand congregating place for all the cattle of the vicinity—a perfect camp ground of the bovine species. They will make the shelters their resting place by day and by night, and will continue to come so long as the supply of salt (which must be added to occasionally) holds out. Of course they will drop their manure here; and by winter you will have the satisfaction of owning at least one lot that has been well manured at small expense. So long as cattle run at large we think it right that *somebody* should have the benefit of the manure if they can get it What objection, friend? B. W. JONES.

SEDGE GRASS AS A FERTILIZER.

I have been so much entertained in the numerous and valuable articles in your paper that I had forgotten that I could contribute anything to interest its numerous readers.

I wish to call the attention of our Southern farmers to a thing so common that it is entirely overlooked—Sedge grass.

In 1866, I had a freedman to turn under a couple of acres of Sedge grass, after sowing twenty bushels of lime to the acre. This remained in that condition until two crops of hog weeds had matured upon it, and when the third crop of weeds and grass had matured, I again turned them under as deep as three horses could draw a large plough. The field remained thus until the following spring; no animal being allowed to run on it all this time. It was then planted in corn, and made, as nearly as I could estimate it, about thirty-five bushels to the acre, though it had not made ten previous to its being turned out in Sedge. This will show to many that Sedge grass can be made a useful agent in restoring our exhausted lands, now regarded as worthless.

We are greatly troubled to know what system of fencing shall be adopted, that will not consume the remnant of our valuable timber. Wire fences are too costly; rails cannot be had, and the several hedge plants are proving rather indifferent substitutes, and are liable after several years are spent in diligent culture to be burnt up should fire get out. JNO. W. HANNA.

CROW-FOOT GRASS AFTER WHEAT.

Some forty years ago a Mr. Isaac Randolph, the large mail stage contractor of this State, used to make from nineteen to twenty-two bushels of wheat on the acre; and in the following season, after the wheat was cut, from five thousand to seven thousand pounds of superior crow-foot hay on the same

land. This hay will bear a favorable comparison, for succulence and flavor, with any other in our market. Mr. Randolph used to expatiate upon this heavy growth of grain and grass in a single season as an evidence of the capacity of our soil. The crow-foot will grow in almost any situation—on the sand hills, on the sea islands, in gardens, and while it will avail itself of a ledge of pure sand, it will abundantly repay any attention or fertilizers bestowed upon it. SEPTUAGENARIAN.

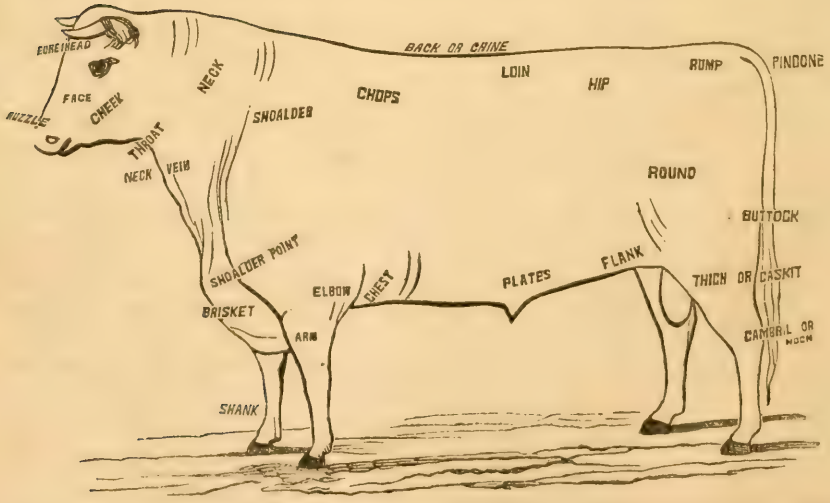
A CHEAP HOME-MADE FERTILIZER.

The *Southern Planter* says that a cheap fertilizer, nearly as good as guano, may be made according to the following formula:

"First, gather any quantity of swamp muck into a pile to dry; measure off six barrels of this, or any other rich black earth, into another pile, and add the following salts, previously dissolved in a barrel or more of water, viz: forty pounds or nitrate of soda, sixty pounds sulphate of ammonia, and half a bushel of common salt; then add a barrel of ashes, a barrel of plaster of Paris, and a barrel of ground bones. Mix all of these well together, and use in the same manner as Peruvian guano."

Dairy and Stock Department.

The Points of Cattle.



Terms Denoting the External Parts of Cattle.

Every breeder, buyer or seller of cattle, on however small a scale, should understand the "points" and other signs of blood and quality, by which their purity of breed and value are determined; and it is astonishing how

much may be safely asserted concerning any particular animal, as the result of mere sight and touch. A judge can ascertain merely by the eye, from its general aspect, whether the ox were in good or bad health; from the color of its skin whether it were of a pure or a cross breed; from the expression of its countenance whether it were a quiet feeder; and from the nature of its flesh whether it had arrived at maturity. The discoveries made by the hand of the judge might even stagger belief. He understands the "points" of cattle, and experience enables him to appreciate their individual and aggregate value.

The "points" by which cattle are characterized may profitably be described in detail:

1. The *nose* or *muzzle* in the Durhams or Short Horns should be of a rich cream color. In the Devon, Hereford, and Sussex it is preferred when a clear golden color. A brown or dark color indicates a cross.

2. The *forehead* should be neither narrow nor very broad. The *eye* should be prominent, and the *nostril* between the eye and the muzzle thin, particularly in the Devons.

3. The *horns* should be small, smooth, tapering, and sharp pointed, long or short, according to the breed, and of a white color throughout in some breeds, and tipped with black in others. The shape is less essential than the color.

4. The *neck* should be of medium length, full at the sides, not too deep in the throat, and should come out from the shoulders nearly on a level with the chine.

5. The top of the *plate bones* should not be too wide, but, rising on a level with the chine, should be well thrown back, so that there may be no hollowness behind.

6. The *shoulder point* should lay flat with the ribs, without any projection.

7. The *breast* should be wide and open, projecting forward.

8. The *chine* should lay straight and be well covered with flesh.

9. The *loin* should be flat and wide; almost as wide at the fore as the hinder part.

10. The *hip bones* should be wide apart, coming upon a level with the chine to the setting of the tail.

11. The *tip of the rump* should be tolerably wide, so that the tail may drop to a level between the two points; and the *tail* should come out broad.

12. The *thigh* should not be too full outside nor behind; but the inside or twist should be full.

13. The *back* should be flat and rather thin.

14. The *hind leg* should be flat and thin; the legs of medium length, and the hock rather turning out.

15. The *feet* should not be too broad.

16. The *flank* should be full and heavy when the animal is fat.

17. The *belly* should not drop below the breast, but on a line with it.

18. The *shoulder* should be rather flat, not projecting.

19. The *fore leg* should also be flat and upright, but not fleshy.

20. The *round* should not project, but be flat with the outside of the thigh.

21. The *jaws* should be rather wide.

22. The *ribs* should spring nearly horizontally from the chine and form a circle.

23. The *skin* should be loose, floating, as it were, on a layer of soft fat, and covered with thick, glossy, soft hair.

24. The *expression* of the *eye* and *face* should be calm and complacent.

A writer in the *Farmer's Magazine*, a number of years ago, described what are properly considered the good points of a cow, as exhibited in the Short Horn breed, in the following doggerel lines:

She's long in her face, she's fine in her horn;
She'll quickly get fat without cake or corn;
She's clean in her jaws, and full in her chine;
She's heavy in flank, and wide in her loin;
She's broad in her ribs, and long in her rump;
She's straight in her back, with never a hump;
She's wide in her hip, and calm in her eyes;
She's fine in her shoulders, and thin in her thighs;
She's light in her neck, and small in her tail;
She's wide in her breast, and good at the pail;
She's fine in her bone, and silky of skin;
She's a grazier's without, and a butcher's within.

How to Milk a Cow.

There is an art in milking a cow as well as in doing anything else, and one which many who have the care of cows seem not to appreciate to the extent they should for their highest interest; for unless a cow is properly milked she will not yield her greatest profit. A writer in the *Working Farmer* gives the following practical directions for performing this important operation:

The exact process of a good milker, one who obtains the largest quantity of milk from a cow regularly, keeps her in milk the longest, is much easier explained by seeing the actual practice than by any attempt with the pen, or oral instruction; and then one must have practice, as in any other trade, to obtain the art; yet when one obtains it he is prone to think it a very simple one, and thinks that any one who has sufficient strength in their hands and wrists can do it, without reflecting that it took much practice and some thought for him to master the simple art.

In the first place, to make milking as little disagreeable as possible, it is necessary to obtain and preserve the good will of the cow, and to treat her with the utmost kindness and gently. Where gentleness is used by the milker, the cow seems to enjoy the pleasure of being milked as a relief to her overstrained udder; and she will stand quietly chewing her cud till the operation is finished, in summer time, if milking is accomplished in a reason-

able time, when she will seek her accustomed place and lie down with a grunt of seeming satisfaction, to continue her rumination. The milking should always be done as quickly as possible after being commenced, without any interruption or talking, *quietly*.

In order to milk with ease, the milker should procure in the first place, a milking stool. I have found one made as follows as convenient as any: Take a board or piece of slab, about twenty inches long, ten inches wide at one end, tapering to six inches at the other, and put three legs to it, two at the wide end, about eight inches long, set slanting, the bottom ends widest apart to stand firm, and one at the narrower end an inch shorter, to stand perpendicular when the stool is finished; the wider end will answer to sit on, while the narrow end is thrust under the cows udder to set the pail on while milking; this keeps the pail free from any dirt or filth. I prefer to milk in pleasant summer weather, in the open air, without confining the cow, except in an open yard. Approach the cow on her right or off side, and gently touch her on the hip—if she does not freely of her own accord come into position—and she will place her foot a little back, exposing her udder to the best advantage for milking; set your stool in position and sit down on it, placing the pail on the end under the cow's udder, if it be clean and free of dust, etc; if not, first clean it with a wisp of hay or straw, and then with a cloth for the purpose; I prefer this mode to washing with water, as frequently the cow resents it by holding up her milk; with properly arranged stables and bedding for winter, this is all that will be necessary in keeping the cows clean, and will be found better than to use water. When the udder and teats are clean, sit quietly down—not off at arm's length, but close as convenient—so that the left arm may rest against the cow's leg while drawing the milk, and will be handy to save the pail and milk, if the cow starts or kicks, by leaning it firm and strong against the leg, which will throw the cows hind parts off and leave you and the pail uninjured. Take hold of two teats, one in each hand, one forward and the other back, no matter whether both teats are on one side or one on either side; clasp the teats in the hands, leaving the lower end to project a little below the hand, and squeeze, shutting the fingers, the inside ones first and then the outer ones, the milk will come, which if directed toward the pail will most likely go therein. When nearly through but little milk will answer to the squeeze; take now both hands to one teat, one to gently press and draw the milk down the udder, and the other to squeeze from the teat as before; continue this drawing and squeezing as long as any milk will flow, trying each teat by turns; the last strippings are the richest in cream and should be all drawn, not only on that account, but for the good of keeping the cow longer in milk, free from disease of the udder or other ill effects. After the above, it would be superfluous to say that the finger nails should be cut close, that they may not be the means of hurting the cow and thereby making her uneasy. If she starts do not sing with a sharp voice, So! and start after her with the stool raised; but to use gentleness and speak kindly, and thereby gain the good, instead of the ill-will of the cow. Kindness and gentleness go much farther in subduing a dumb animal than any other course.

Hints on Draught Horses and Harness.

Whenever a horse is employed for the purpose of drawing any vehicle or load, it is of the utmost importance that he should be able to employ all his strength to advantage. Every one who considers at all must acknowledge that if a horse has to do his work in a cramped and confined condition, or

when he is inconveniently placed as regards the load, he cannot exert his full power, which is so much loss to his master; or, if forced to perform a certain amount, then he is obliged to waste a great deal more of his strength (or muscular power) than is required, to his own great pain and injury.

The act of pulling is performed by leaning forward with the weight of the body against the resistance of the opposing force, and then, by strong movements of the limbs, keeping up and increasing the pressure—the weight of the body being of the utmost importance. Muscular movements exhaust the strength, whereas the body weight is easily employed without consuming the vital energies.

First, and unfortunately, in too many cases, the collar is quite unfit for the animal. A horse collar is, we are sorry to say, frequently looked upon merely as a ring for the neck, to which the traces are to be affixed; whereas there is no part of the harness which is so important, and which ought to fit so accurately.

Second. The horse is often prevented from throwing his weight into the collar by a check-rein—a useless and painful encumbrance, introduced by vanity and retained by thoughtlessness amounting to cruelty. Ask horse-keepers why they use it, and hardly any two will give the same answer, although it is generally supposed by them to be a great safeguard in case of stumbling. The real object with which it was introduced, was to make every horse to which it was applied, however weak, or old, or poor, assume the lofty carriage of the thoroughbred horse. Fortunately, this vitiated taste is going out of fashion as better information is diffused.

Thirdly. A great cause of unnecessary pain and labor to many horses, is a neglect in keeping the wheels properly greased. "Some persons may not be aware," says Hicover, in his work on Bipeds and Quadrupeds, "that the trifling neglect of a pair of wheels being comparatively dry or well greased, will cause twenty miles to take more out of a horse than forty would in the latter case; yet wheels absolutely screaming from dryness, are often seen and heard, attached to carts and wagons, and thus would the brute in human form let them scream till he had reached his journey's end or finished his day's work, though his horses were drawing from such cause at least one ton in four of resistance more than they would if the defect were attended to."

Men who have loaded carts and driven horses all their lives ought to know how a horse should be worked to his master's advantage and his own comfort; but the fact is, the generality of working men, especially negroes, know little and care less on the subject.

Gapes in Chickens.

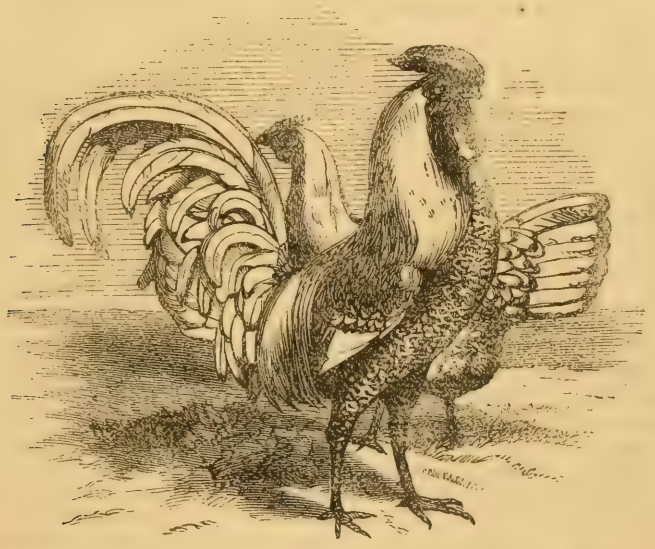
Many remedies for this disease among young fowls have found their way into our public journals, still it seems that none of them give entire satisfaction. I have no original recipe for the cure of gapes to offer. I think that Entomology must come in to our aid and tell us all about the habits of the little red worm (*Schlerostoma sygamus*) that causes this disease. I have always been successful in raising young fowls by having them hatch very early in the spring, before the appearance of this worm. I find that if chickens are hatched the first of March in this latitude (S. E. Va.) that they always escape. The same is the case when hatched late, say September. We conclude, then, that the little red worm that causes the mischief appears only in

spring; and we regard it a matter of vital importance that the *exact* time of its appearance be found out. We are satisfied that chickens will never have the gapes if hatched sometime—say six weeks—before and after the period of the insect in question; but we know nothing of its habits, and are unable to give any information concerning it. Will not some one give us the natural history of the *Schlerostoma*, and thus render an important service to those interested in poultry and eggs?* To remove an evil we must strike at the *cause* of that evil.

B. W. JONES.

Cottage Home, Surry, Va.

The Hamburgh Fowl.



Of this breed of fowls there are several distinct varieties. The Silver Spangled, represented in our cut, are of medium size and very handsome, being beautifully furred and spangled with black. The Golden Spangled differs from this variety mainly in the yellowish ground color of the plumage. The Pencilled Hamburghs, of which there are two varieties, Silver Pencilled and Golden Pencilled, are somewhat smaller than the spangled varieties. The Silver Pencilled is also known as the Bolton Gray. The average weight of the cock is about four and a half pounds. The hen generally weighs about a pound less. The Black Hamburgh has a plumage of a uniformly glossy green-black.

All the Hamburghs are beautiful fowls, rich in plumage and fine in form; great layers, (the eggs, however, are small;) seldom desire to sit; and are good for the table, falling but little below the best varieties in this respect, although not so large as some others.

The Hamburghs are impatient of confinement, and to do well must have a wide range of lawn or grassy yard.

* Will our accomplished Entomologist, Mr. Dodge, please make a note of this?—Ed.

Stock Miscellany.

A GOOD WORD FOR THE POLAND FOWL.

There are at least five varieties of Polands, all of which are about the same size, and mainly distinguished by the difference of color. This breed has its solid merits. They mature slow, are quite hardy if kept in a dry place, and under favorable circumstances are most prolific layers, never wanting to set. They weigh about six and one-half or seven pounds, and, on the whole, are desirable to have in any farm yard.

CAUSE AND CURE OF POLL EVIL.

Poll Evil results from neglect or abuse. If the opening into the tumor be contracted, enlarge it with the knife; shave away all surrounding hair; wash it with Castile soap and tepid water, and apply a solution of carbolic acid and glycerine (twelve or fifteen drops of the acid to an ounce of glycerine) to the part—which will, with attention to the diet and cleanliness, effect a cure.

BONE DUST FOR POULTRY.

A correspondent of the *Ohio Farmer*, says:

Last winter I procured two barrels of bone, intending to use it for Irish potatoes and other garden crops. My wife appropriated some of it for her roses in the flower garden, by simply strewing it on the surface of the ground around the bushes. The fowls have free access to the garden, and were discovered eating the meal very eagerly. Thinking it might be of service to them, we gave them some, for several weeks, and I assure you it was but a short time before the eggs began to come in such numbers as we had never known before.

AN ANOMALOUS RESULT IN HATCHING CHICKENS.

On the 7th of September my wife set a hen on eleven new eggs. The result was as follows: One hatched the eighteenth day, September 25th; one on the twentieth day, September 27th; and three on the twenty-first day, September 28th. Six eggs did not hatch. Of the three that hatched on the 28th, one was *without any sign of eyes, and had the bill crossed;* the upper part being placed at nearly right angles across the lower part. The chicken was otherwise well formed. Can any of our Solomons give a satisfactory explanation of these anomalous results?

B. W. JONES.

Protect the birds by placing boxes among your trees for them to build in and shelter them from the winter storms. These tenants will pay good rent by hunting up hurtful insects.

Department of Natural History.

We have the pleasure of announcing that we have secured in this Department the services of Mr. CHARLES R. DODGE, Assistant Entomologist of the Department of Agriculture at Washington, who will devote especial attention to insects injurious to vegetation in the South, without neglecting, however, other branches of Natural History.

Specimens of insects, accompanying letters of inquiry, (securely packed,) may be sent by mail, post-paid, to Mr. DODGE, Department of Agriculture, Washington, D. C.

The Mole Cricket.

This insect (*Gryllotalpa*) which is so destructive to vegetation in Europe, sometimes occurs with us in considerable numbers, in certain localities, though doubtless in many cases damage done by them has been attributed to other causes, simply because their presence was not detected. They are usually met with in low or marshy places, or in moist gardens, their food being the roots of plants. Their eggs are deposited to the number of two hundred or more in cavities in the earth, and the young insects do not come to maturity before the third year, when they are about an inch and a half in length. They are covered thickly with short hairs, giving them a soft, velvety appearance, and are of a light brown or fawn color. The fore-feet, which are very large and stout, are notched or serrated so that the insect makes its burrows with great rapidity. They are nocturnal in their habits, and are most active at night, at which time only they appear above ground. As they are said to be very fond of carrots, this root grated and mixed with arsenic may be placed in localities infested by them with good effect.

Insect Injuries.

In the order *Lepidoptera*, to which the butterflies and moths belong, we find the greatest number of leaf-eaters, and some of the worst enemies to vegetation. The cotton army-worm (*Anomis xylinæ*) is a *too* well known example.

The larvæ of butterflies generally suspend themselves by hooks, or by a silken thread, or both, to some object near the food plant, and there change to the pupa state. In such a case they may be sought out and killed, and the future females prevented from laying their hundreds of eggs for generations to come. With the hawk-moths (such as are produced from tobacco worms) the pupa are formed under the soil; and as they are large, reddish-brown objects, easily recognizable by the jug handle appendage on one side, they may be crushed whenever thrown out by the plough or spade.

The pupæ of moths, candle flies, etc., are harder to find. Many of the

larvæ go into the ground; others "make up" in obscure, out of the way places, in old fences, etc.; and many more roll up the leaves of the plant which has served them for food, and there go through with their transformations. The apple moth (*Carpocapsa pomonella*) transforms on the tree, in crevices of the bark; and with this knowledge we are enabled to furnish it artificial hiding places, where it can be easily destroyed.

Thus, by learning the habits of injurious species, oftentimes the remedy suggests itself; so, after all, it is observation that makes the entomologist and not the knowledge of genera and species, though it has its place.

We have been considering only those insects which are injurious by devouring the leaves of plants directly. We are now come to speak of a few insects which destroy foliage in other ways. Many of the "*micro-lepidoptera*" live entirely within the leaf, under the epidermis, there constructing mines or galleries, in which the insect goes through all its changes. By holding a mined leaf up to the light not only the serpentine track may be seen, but the insect itself. Many of the gall insects (*Cynips*) disfigure and injure growing plants by stinging the leaf in depositing their eggs, producing variously formed swellings and protuberances, in which their larvæ live. A most common example is the grayish gall found upon oak leaves. Some plant lice, (*Hemiptera*,) similar in form to those found on the terminal shoots of cotton, form galls in like manner. Others, however, are destructive by congregating in vast numbers, on the under side of the leaf, there remaining sucking the sap, until it turns yellow and dies. Many of the true plant bugs, larger insects belonging to the same order, also do great damage in this way. The squash-bug, (*Coreus tristis*,) is an example.

There are many other ways in which the leaf is injured, but time and space will not admit of a more detailed account at present. In our next we will glance at the insects which injure the stem and trunk.

A Mistake.

The writer of the article on the Cactus Hedge, in the November number of The Rural Carolinian, after speaking of "a caterpillar almost exactly like the ordinary cotton caterpillar," which he found eating out the "lobes" of the above named plant, asks if "it would not be rather dangerous to surround a cotton field with a plant that harbors, protects and fattens such dangerous enemies as this does." Not at all; it is doubtful if the worm would ever be found upon the cotton. Were insects as variable in the habits as the above would imply, an entomologist's labor would never cease; but such is not the case, as any one can prove by rearing caterpillars in confinement. The large Cecropia worm that has fed during the first half of its existence on the leaves of the apple, if removed to anything else will starve rather than touch it. How much greater would be the change from a close confinement within the fleshy lobes of a cactus to an "out-door life" on the leaves of the

cotton plant, or *vice versa*. Leaving cotton entirely out of the case, from an entomological point of view the question would be: Will the cactus stand the attacks of the insects peculiar to it? and is there no remedy? Another season will Mr. F. please favor us with specimens?

The Tent Caterpillar.

In the May number of your valuable periodical, a lady correspondent asks how to destroy the tent caterpillar without "torturing" them to death with the torch. For the information of all interested, I will tell you how to destroy them easily:

During the fall, the insect deposits its eggs on the small twigs of the apple tree, the twigs not being much larger than a good-sized broom-straw. The eggs are enclosed in a dark colored substance resembling wax, and about three-fourths of an inch in length. This little bunch of wax, does not quite meet around the twig, being glued to the upper side and within a few inches of the end of the twig or limb. The eggs hatch, generally, about the first of March or as soon as the buds begin to swell. After hatching, this waxy looking substance is found, on examination, to be full of small cells not larger than the point of a needle. On first hatching out, the worm is so small as to escape detection for some days, unless very closely looked for. It commences its work of destruction immediately on the opening buds. To destroy it you have only to examine your trees any time during the winter, when the leaves are off, when by careful inspection you will discover this egg depository; break the twig off and destroy, and I assure you you will have no caterpillars that year.

Rock Hill, S. C. S. W. STURGIS.

Answers to Correspondents.

D. H. J., Charleston. 1. Only one of the green worms you forwarded, taken from cabbage, reached me alive. It is not a true cabbage worm, which produces in the perfect state a butterfly, (see September number of THE RURAL CAROLINIAN,) but belongs to *Nocturnal Lepidoptera*, producing a brownish moth with a metallic spot on each fore-wing. It is a *Plusia*, though I cannot say what species until it has completed its changes. A striking difference between this and the ordinary cabbage caterpillar is found in the number of ventral feet, *Pieris* (and, in fact, nearly all of the commoner caterpillars) having six pectoral, *eight* ventral and two anal feet, while this lacks two pair of ventral feet, and, consequently, moves with a looping gait, like the measuring worms or *Geometrids*. The cotton army-worm differs from this and other caterpillars by having *three* pair of ventral feet. Our cabbage worm has also been found in Georgia, feeding upon the flowers of cotton.

2. The whitish caterpillar skin, enclosed in a silken web, contained hundreds of the pupæ of some minute *hymenopterous* insect not yet changed to the perfect state. They, doubtless, caused the death of the caterpillar—which may have been one of the above—and are, therefore, to be reckoned as beneficial.

ERRATA—NOVEMBER NO.—Page 104, 8th line from bottom of the page, for *galenuca*, read "*galeruca*."

Page 105, 7th line from top of the page, for Shurub, read "Shurnb."

The same, 6th line from end of article, for *emplytus*, read "*emphytus*."

Department of Mining and the Mechanic Arts.

The Graniteville Manufacturing Company.

This pioneer Cotton Manufacturing Company is now, we are glad to learn, in a most flourishing and prosperous condition, competing successfully with the best enterprises of the kind elsewhere, and demonstrating that cotton can be manufactured as well as grown in the South. It is strange that the fact should ever have been doubted.

From the last Annual Report of its efficient President, H. H. Hickman, Esq., we gather the following facts and figures:

The production of the mill during the year has been as follows:

4-4 Sheeting	1,145,626 lbs.	86,359 pieces.	3,367,000 yards.
7-8 Shirting	663,627 "	58,799 "	2,332,800 "
7-8 Drilling	368,952 "	28,002 "	1,103,880 "
3-4 Shirting	392,595 "	45,307 "	1,839,600 "
Total	2,570,800 "	218,467 pieces.	8,643,280 yards.

There were consumed 2,932,972 lbs. cotton, costing in the aggregate $761,475.46—an average cost of 25.96 cts. per pound, the extremes being 32½c. and 20c. for middling cotton. The total cost of the goods was $955,684.62, or an average of 11.05c. per yard.

The gross profits on sales of goods during the fiscal year from March 1st, 1869, to February 28th, 1870, inclusive, were as follows:

On Shipments to New York and Baltimore	$51,589.62
On Domestic Shipments	63,611.11
Total Profits on Goods	$115,200.73
Net sales of Waste	16,840.53
Balance on Account of Rents received	754.50
Total Profits for the year	$132,795.76

About 550 operatives are employed. They are almost exclusively natives of the South, and a large proportion of them were born in Graniteville itself.

The following resolution, adopted at the last annual meeting, shows that the Company is not unmindful of the best interests of its employees:

Resolved, That the Board of Directors be authorized to appropriate one thousand dollars to the support of a school for the exclusive benefit of the children of the operatives and overseers, under such regulations as they may see proper.

The names of the officers of the Company are as follows:

President.—H. H. Hickman.

Directors.—A. S. Johnson, W. L. Trenholm, A. B. Davidson, James P. Boyce, H. Beattie, James J. Gregg, J. M. Clark.

Secretary.—Jas. H. Giles.

Wine.*

Wine is the *fermented* juice of the grape, though the term is frequently used to designate any saccharine solution, the sugar of which has been wholly or partially converted into alcohol. This definition, however, cannot be very strictly construed, for if so, the most popular wines of our day would be excluded, viz: Madeira and Sherry. These wines both contain *distilled* liquors, added to give them body, to please the taste of consumers, and to preserve them from acetous fermentation. The custom in Madeira is for the merchants of Funchal to purchase the wine from the manufacturers, distil a portion into brandy, which they add to the wine at the rate of twenty-four to every one hundred and ten gallons. The wine of Madeira originally is very little if any stronger than the wines of Germany and France, and is only made so by the addition of brandy. When it is considered that for every per cent. of alcohol in any given wine there must have been in the grape juice two per cent. of sugar, you will readily perceive that no grape can yield a must sufficiently rich in saccharine matter to produce wine containing from 17 to 19 per cent. of alcohol, and from 3½ to 5 per cent. of unconverted sugar, and yet such is the average composition of the Madeira and Sherry, most prized by connoisseurs.

Mr. Henderson, in his work on the history of wine, published in London in 1824, gives a table prepared by Mr. Brande, showing 22.27 per cent. alcohol, as the average of four specimens of Madeira. Prof. Wm. Hume in more recent analyses found from 17 to 19 per cent. of alcohol and from 3½ to 5 per cent. sugar. To produce such wine would require a must containing from 38 to 43 per cent. of saccharine matter. The richest grape that I have met with yielded a must whose specific gravity indicated 22.50 saccharine matter, which would have given a wine of 11.25 alcohol, if *all* the sugar had been converted into alcohol by fermentation. The following table will show the percentage of saccharine matter in the grapes now in cultivation in this section of the country:

Flowers,	specific gravity,	1.061	=	15 per cent.	sugar.
Scuppernong,	"	1.064	=	16 "	"
Concord,	"	1.066	=	16½ "	"
Catawba,	"	1.069	=	17 "	"
Isabella,	"	1.073	=	18 "	"
Black July,	"	1.095	=	22½ "	"

By halving the percentage of sugar, the percentage of alcohol can be approximated, and the result will compare favorably with the wines of France and Germany. Mr. Brande gives 8.71 as the percentage of alcohol in the famous Johannisberger of Germany, and Prof. Hume 8 per cent. for the Sauterne of France.

* An essay read before the Pomological and Farmers' Club, of Society Hill, S. C., by J. J. Lucas.

It has been found, however, that wine containing less than ten per cent. of alcohol, has a strong tendency, in our climate, to acetous fermentation; hence the practice of adding brandy or sugar to our weak musts. One or the other addition is necessary to give us a durable wine. The custom of adding cane sugar to weak musts has been common in France for many years, and the practice has increased rather than diminished. By adding sugar before fermentation has commenced, we obtain alcohol in more intimate combination than can be accomplished by the addition of brandy either before or after fermentation. The difficulty of producing a pleasant combination of brandy with wine, has been partially overcome by the merchants of Funchal, who have learned to prepare their wines for particular markets, by a voyage to the East or West Indies. The explanation is evident—that a new fermentation is brought about by removal to a warmer climate, and thereby a blending of the wine and brandy effected. The nutty flavor of Madeira is not communicated like Sherry, by means of bitter almonds, that is inherent in the wine.

One of the chief difficulties in wine making in this section of the country, is the fact that nearly all of our grapes are liable to rot, with the exception of the Scuppernong, and its varieties. This grape has many good qualities to recommend it to our favorable consideration. It is native to our soil; is easily propagated by layers; readily trained; requires no pruning; blossoms in June too late to be injured by frost; always bears a crop; the fruit never rots, and ripens late in the season, which is favorable to successful fermentation. Professor Jackson, of Boston, says Scuppernong wine is the best, thus far, produced in the United States, and earnestly advises the cultivation of the grape on a large scale. It not only makes a good still wine, but is probably the best champagne grape on this continent, east of the Rocky Mountains. Mr. Flagg, in his "European Vineyards," speaks well of it. He says: "I am inclined to think from my experiments with it, that the Scuppernong of North Carolina, is as good a natural sparkler as we need." As yet, we lack the skill to make sparkling wines, but a good still wine can be made by following the usage of France and Germany, and supplying the saccharine deficiency. I submit for your examination a specimen of Scuppernong wine from the vintage of 1869, made by adding 14 per cent. best cane sugar to each gallon of must. I trust each member of the club may be encouraged to plant more or less of the vines during the coming winter for wine making.

Peat as Fuel.—Peat is cleaner than coal, and is easily kindled with paper. It leaves about five per cent. of ashes, but no cinder or clinkers. A lump of peat as large as a man's two fists, will burn seventy-five minutes and keep a kettle boiling. It keeps ignited under ashes. Some of the Northern railroads have adopted the peat as their best and cheapest fuel. We are glad to learn that our South Carolina peat deposits are to be utilized.

The Steam Plough Again—an Englishman's Views.

I have seen at times different notices about the steam plough in your excellent magazine.

There is a very good description of one kind of "Steam Tackle," as it is called in England, in the number for November of last year; then Col. D. Wyatt Aiken comes forward with a description of the same set, except that it is a double instead of a single one; and, to the amusement of an Englishman, speaks of it no longer as a myth, but actually a success. In England, we knew that nine or ten years ago! I have had friends and relatives amongst English farmers, in the counties of Bedford, Northampton and Buckingham, who have used the steam plough successfully, during the whole of that period. Messrs. John Fowler & Co., of Leeds, as well as my friends, Messrs. James & Frederick Howard, of Bedford, have manufactured I should be afraid to say how many sets. Steam ploughs are at work in France, Belgium, Austria, Russia, Egypt, where the Pasha alone, I believe, has two hundred sets, and in India. Yet, to my astonishment, when I landed for the first time in America, last year, I found the Steam Plough practically unknown. I am still more puzzled by a paragraph in your magazine for June last, page 572, speaking of premiums being offered in the States of California and Illinois, for the invention of a steam plough. To me, it seems as reasonable to offer a premium for the invention of a locomotive or an ice machine.*

In regard to the latter, I have seen quite recently paragraphs in Southern newspapers, referring to the invention of ice machines in New Orleans and other cities, as something entirely new. There were two fine ones in the London International Exhibition of 1862. One of these, worked by ether, you will find described in the "Official Illustrated Catalogue," Fourth part, Class VIII, page 67. Reference is there made to one then working in Peru. I assisted at the inauguration of one in the City of Manilla, about six hundred miles from Hong Kong, in the year 1864; and the Peninsular and Oriental Steamship Company have had them working in Bombay and other places, to supply their ships with ice, for some years. The moral to be derived from all this is, that the Southern States are behind in the knowledge and use of many mechanical inventions, which many other countries have long been enjoying the benefit of.

Nothing has been more strongly impressed on my mind, since I cast in my lot down South, than the need of better implements and the clearance of all obstructions for their use. By obstructions I mean roots and stumps. The stump puller is now a most essential tool, in most parts of the country. Land

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* Of course these premiums were not offered in ignorence of what has been accomplished in England and elsewhere, but with the hope of drawing out a new American invention, and possibly something better adapted to our use than the English machines, good as they undoubtedly are.—Ed.

must be improved from year to year instead of deteriorating; and to do this, there is need of good turning ploughs, harrows and rolls, none of which can be used successfully in a field full of stumps.

After the stump puller comes the steam plough. Stumps and roots are the only obstacles to the working of this splendid implement. Hilly ground makes little if any difference to it, its power is so great. When in England last September, I went into a wheat stubble field, owned by Messrs. James & Frederick Howard, near Bedford, and saw a double engine set of tackle, smashing up with the cultivator, (not the turn over plough,) a hard, dry piece of land, far stiffer than anything I have ever seen in the Southern States, fifteen inches deep, leaving it in splendid condition for the coming frosts and rains of winter to act upon. This field was a very hilly one, so much so, that standing at one side of it, on one of the engines, the other engine could not be seen; and yet the cultivator, drawn by a steel wire rope from one engine to the other, did its work perfectly. A heavy crop of wheat was taken off it in August, averaging, perhaps, fifty-five bushels per acre; this was cut by the reaping machine, and the whole crop, straw and grain, transported to the stack-yard, a distance of from one to two miles, by one of the engines employed in ploughing, thus doing away, almost entirely, with the use of horses.

The time is at hand when the traction engine will do all the ploughing, hauling, ginning, sawing, grinding, etc., on any Southern plantation. But, sir, what prevents it being done to-day? Nothing but the absurd policy of the United States Government in imposing a duty of forty-five per cent. on the most valuable implement by far that the South requires. Labor is scarce and precarious; mules never were, and never will be able to do justice to our soils; horses are impracticable in the heat of summer; fuel is cheap and abundant, and the engine will cut and haul its own supply; and, finally, water abounds everywhere. A much greater amount of work could be done with the same number of hands, and a less number of mules being required, the corn now consumed by them would be available for human beings, and thus speedily the South would grow sufficient for its own wants. Let it be remembered, too, that the steam engine only eats whilst it works; as soon as the fire is drawn all care about it ceases, thus removing, to a large extent, the anxiety attendant upon every planter as to the attention to and health of his mules.

Is not this just the implement we need? Never a day passes but I long to see it on my own land, and would have had it by this time but for the impossibility of bringing myself or friends to pay forty-five per cent. duty on so expensive an article.

Does the Government derive any revenue from the duty on steam ploughs; anything comparable to what it would obtain from the taxation on an increase of articles used, in consequence of the increased production and purchasing-power of those who would become owners of steam ploughs, either separately or jointly, if they could be obtained at less cost?

Agricultural wealth is what this country is striving after, to regain the splendid position it held in that respect ten years ago. Then, by all means,

let us have as soon as possible, and at the lowest cost, the implement calculated more than any other to produce it. Cannot some strong influence be brought to bear upon Congress to induce it to repeal the duty on steam ploughs? Respectfully, yours, J. B. R.

Bloomhill, Manchester, S. C., August, 1870.

Smith's Improved Patent Well-Fixture.

The device for drawing water, represented above, commends itself as cheap, convenient and safe. We have never used or seen it; but a glance at the cut gives us an idea of the principle, and impresses us favorably in regard to its practical operation. The bucket, having a valve in the bottom, the water can be drawn from the very bottom of the well, thus procuring it cooler and clearer. In its descent the bucket can be checked or stopped at any desired point by means of a break ingeniously arranged.

This fixture is manufactured at Richmond, Va., by H. M. Smith & Co., who will send circulars to those who may desire further information.

Department of Labor and Immigration.

The Dignity of Human Labor.

All honest labor is honorable. Yes! truism as it is, the world has taken a long time to learn this lesson, which like many other simple, unquestioned and self-approved maxims, is yet but imperfectly acknowledged.

But it should stand constantly before us. It should be engraved upon our thoughts and our habits, our social and our political institutions. Not simply as a passive and undisputed form of words which we hear and approve without question, but as an active, practical and aggressive principle of life, a thing in which we have faith, which must guide our opinions and regulate our conduct.

As the world advances in intellectual and industrial development, the minds of men are more and more delivered from the incrustations of old prejudices and slavish habits of thought, material prosperity asserts its claims and the dignity of human labor is more fully recognized. The toil-hardened hand, no less than the active brain, must be the passport to honor.

The love of ease is universal and instinctive; and labor, whether of body or mind, is more or less painful. Man never works unless urged and impelled, either by necessity, habit, or ambition to excel, or (in rare cases) by a desire to benefit his fellow-beings. And yet this law of our nature, was imposed upon us in the beginning, and will continue to the end of time.

The *division of labor*, in this advanced state of the world, obviates the necessity of its literal requirement that each one shall wring from the reluctant ground, his daily bread by the sweat of his face; but the law of labor still remains universal, and binding upon every one. Labor, not with the hands only, but with the head also. Both are honorable, both have their sphere of action, both fulfil the law. Let us not come in with our conventional notions and say, "this kind of work is honorable," and that "not honorable." "If the whole body were an eye, where were the hearing? If the whole were hearing, where were the smelling? But now hath God set the members, every one of them in the body, as it hath pleased him." "And whether one member suffer, all the members suffer with it; or one member be honored, all the members rejoice with it."

Yes! labor is honorable because God has instituted it. "There are diversities of operation, but the same spirit." The ministers of state, the commander of armies—all high in authority and power, if they are doing their duty, labor with even more incessant toil than the poor artisan, who, free from care after his day's work is done, can enjoy the simple pleasures of domestic life. Each has his allotted sphere, and each is performing the duties of his place. It is not said, that he to whom the ten talents were given, had more

honorable employment than him who had the one, if they both improved their portion alike.

He who assumed our nature, and subjected himself to its laws, dignified human labor in his own person. The fishermen of Galilee, his chosen instruments for civilizing the world, earned their daily bread on the waters of the Lake. Saul of Tarsus, who sat at the feet of Gamaliel, and was instructed in all the learning of the Hebrews,—whose writings will ever remain a model of beauty and power to all generations of men,—amid his pressing cares and duties, could find time for manual labor, and say—"THESE HANDS *have ministered to my necessities.*" Not the hands of others, but these, my own hands, have supported me. I have been chargeable to no man.

These thoughts come with special application to us who are just emerging from crushing and overwhelming calamities, and they give cheer and encouragement to the almost desponding heart. Reverses try the souls of men. Those are the true heroes who can bow submissively to the dispensations of Providence, and taking manfully their share of the primeval law, go to work with sturdy hands and honest hearts to repair their broken fortunes, and build up the waste places of the land.

In the words of the son of Sirach:

> "Whatsoever is brought upon thee, take cheerfully,
> And be patient when thou art changed to a low estate;
> For gold is tried in the fire, and acceptable men
> In the furnace of adversity."

Aiken, S. C. H. W. RAVENEL.

International Land and Labor Agency.

We had occasion last year to refer to this organization as one which might aid us in procuring labor and increasing immigration to the South. Its object, as set forth in its circulars now before us, is to facilitate the settlement of English emigrants in pleasant and healthy homes or in permanent and profitable employment in the United States, with special reference to their comfort and well-being. It has no bias nor interest in favor of any one section of the American Union above another, but endeavors to obtain and impart full, impartial, and trustworthy information in regard to each and all of them. Its principle, spirit, and objects have won for it great confidence and commendation in both countries. Our attention has been again called to it by the following letter, which, being delayed on its way, failed to reach us in time for an earlier publication:

BIRMINGHAM, ENGLAND, September 12, 1870.

Editor of The Rural Carolinian:

DEAR SIR: We had the pleasure a few days since of receiving a letter of inquiry from Benj. Rhett, Esq., of your city, who mentioned having seen in your journal some notice of the objects of this Agency.

We have taken the liberty of sending you by this mail a packet of papers, which will give you more details of our work, and in which you may, perhaps, be interested.

Many Southern gentlemen have expressed their preference for employing English farmers, gardeners, grooms, etc., and we think if definite offers were made with the duties specified, your people might easily have the want supplied, particularly as you are on the seaboard and can be reached without inland expense; and your climate would be an attractive one. The important point would be to assure us the situations were in healthy localities.

We would propose to make the first shipment by sail direct to Charleston about the middle of November. This will give time to send orders and have the hands ready. The expense for passenger will be not far from £5 each to land in Charleston. If your people choose to advance this amount we will use our best endeavors to have such men as each may describe, go to fill each order, and make the men give the best security they can from friends here, that they will remain one year at wages specified.

As explained to Mr. Rhett, the agricultural districts of England pay such poor wages that few men can save sufficient to take themselves, much less their families, across the ocean.

The usual wages given to those we have sent has been, with board and lodgings, $15 per month for men—boys from fifteen to twenty years of age, $8 to $10. Many good men would like to go upon these terms, who would no doubt long remain in the families of their employers.

We will enclose you papers which will show the requirements for domestic servants engaging through this office.

We hardly think it would be advisable to send girls by sail, unless their parents were accompanying them.

We were last spring requested by a Liverpool shipping house to procure 3,000 English sparrows for the cotton planters of South Carolina, but the intimation came after the frosty weather, in which the birds are usually caught, had passed. We understood it was proposed by some of the South Carolina planters to import these little birds to destroy the cotton worm. It will give us great pleasure to attend to this without any charge for our services. We have had cages nicely made to hold several thousand expressly for shipping birds, and we think they can be put on board the vessel for you at a cost not to exceed 30s. (thirty shillings) per hundred, if secured early in the season.

It would be gratifying to us if you considered any of these suggestions of sufficient interest and practicability to forward them, so far as you thought best, through the columns of your valuable paper.

We are confident if we can reach all the interested parties, that our Agency is calculated to do good both for your citizens and for the English families who will like to find a home, and whom your people will like to welcome to your country.

I am, dear sir,

Your obedient servant,

J. M. HOLMES.

Those wishing to employ English laborers will do well, we think, to avail themselves of the facilities afforded by this Agency, and the proper concert of action, through our immigration societies or otherwise, might make it a great public advantage. The circulars of the Agency can be seen at this office.

Who and What are "The Patrons of Husbandry?"

"The Patrons of Husbandry" is the name of a secret organization, having, we are told, for its grand object "the elevation of the cultivator of the soil; the diffusion of intelligence; the exemplification of love and unity, and the enlistment of the sympathy and influence of woman in the work.

"The aim is to elevate the cultivator of the soil in his own estimation; to exhibit the true value and real position of himself and his family to society; to call out and secure unification to his action; and to give that power in *fact* that they are entitled to from *numbers;* to interpose harmonious influences so as to prevent our sons and daughters from fleeing from their rural homes as from a curse, and seeking more congenial associations in city life; to organize the action of the agricultural population, so as to give effect to their influence and make them be felt as a power in the land—alike for their own and the nation's benefit; to form them into a threefold cord of unity, love and intelligence, instead of being, as at present, a useless, powerless, *rope of sand.*

The subordinate Granges have four degrees:

First—Laborer (male); Maid (female.) Second—Cultivator (male); Shepherdess (female.) Third—Harvester (male); Gleaner (female.) Fourth—Husbandman (male); Matron (female.)

STATE GRANGE.—Fifth—Pomona (Hope.)

NATIONAL GRANGE.—Sixth—Flora (Charity.)

SENATE.—Seventh—Ceres (Faith.)"

Religious or political discussions are not tolerated in the work of the Order, and no political or religious tests for membership are applied. Any person engaged in agricultural pursuits, of the age of sixteen years (female) and eighteen years (male) may become a member. The Order is spreading rapidly, especially in the West, and will not be long in making its power felt for good.

The Land Donation Scheme.

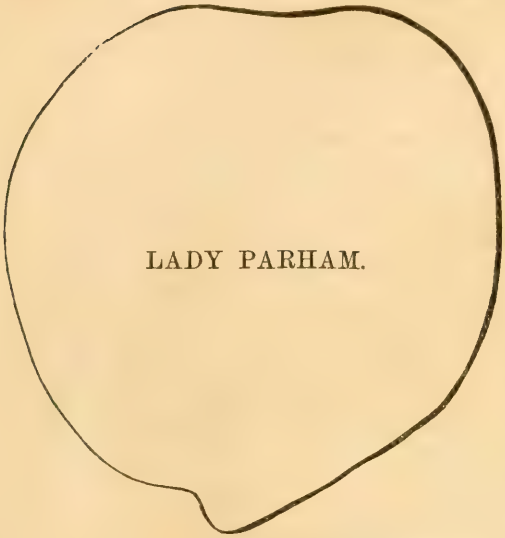
We have published articles favoring the donation of small tracts of land to immigrants; also recommendations to do the same for the landless among our own people. We approve of both. There are those among us who have large bodies of land which are worse than useless to them in the present condition of the country. The donation of a portion of this surplus to actual settlers would increase the value of the remainder, and the donors would be made richer instead of poorer by their generosity.

Those who would exclude all but our own people from such gifts take a narrow view of the subject. To make our own poor people landowners is a good thing, but it does not increase our population or supply the additional labor we require. Our "charity should begin at home," but it should not *end* there.

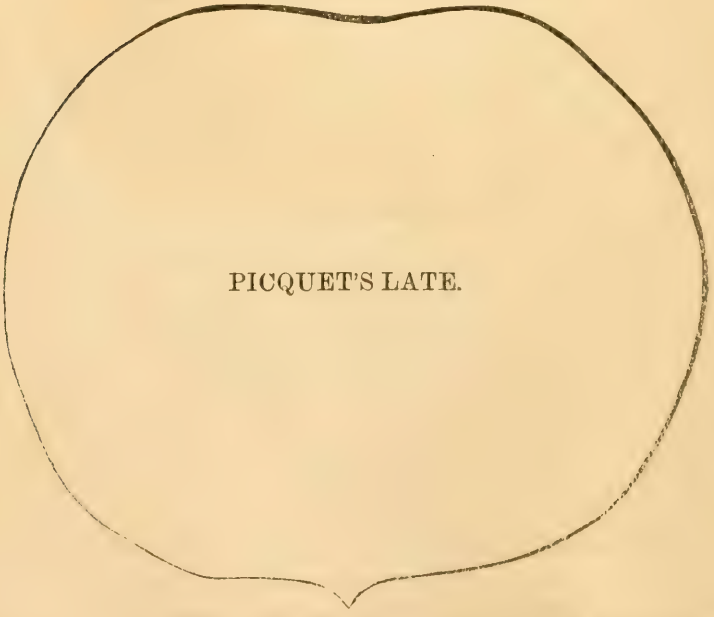
These remarks have been suggested by several communications now before us on this subject, which we should be glad to print if space would permit, but which we are constrained to set aside for the present, to make room for more urgent matters.

Department of Horticulture and Rural Art.

Southern Fruits—Peaches.



Size, medium; shape, oblong, slightly one-sided; skin, white, seldom showing any red; flesh white, with some red near the stone, juicy, vinous and highly flavored; freestone; flowers, small; glands, reniform; season of maturity, end of September and lasts until October 15th; tree, a vigorous and open grower, very prolific; quality, very good. It was originated by the late Thomas Affleck, Esq., during his residence in Louisiana. A very desirable late variety.



Size, large to very large, often measuring twelve inches in circumference; form, round or somewhat flattened, and a little one-sided; skin, yellow, with a deep red cheek; flesh, yellow, buttery, rich, sweet and perfumed, with a slight apricot flavor; freestone; quality, best; flowers, large; glands, reniform;

season of maturity, end of August, and continues some years until September 15th.

This variety originated with Antoine Picquet, Esq., of Belair, Ga., and was first disseminated in 1861. Its magnificent size, extra quality, and maturing at a season when peaches are scarce here, form a combination of qualities seldom found in a fruit. It has been extensively tried throughout the country and everywhere has sustained its good points. Tree, a rather compact grower.

The Buff Apple.

This is a handsome and popular apple, grown extensively in North Carolina, Georgia, and other portions of the South. The fruit is of the largest size, roundish and sometimes somewhat ribbed and angular; skin, thick; color, yellow, thickly striped and shaded with dull red, with greenish and russet spots; stem, rather short, in a medium cavity; calyx, large, in an irregular basin; flesh, yellowish, tender, sub-acid; quality, good, under favorable conditions, but sometimes indifferent; season of maturity, October, but will keep till March. The size and beauty of the Buff makes it a favorite in our markets. The finest specimens we have seen come from North Carolina. Our cut represents an uncommonly regular but only medium sized specimen.

Profits of Orange Culture.

Mr. F. L. Dancy, in the *South-Land*, figures up the profits of orange culture in Florida, in the following very satisfactory style. Being an experienced grower, his figures ought to be, and probably are, trustworthy:

"A grove or orchard of Seedling trees, fifteen years old, should average 1500 to 2000 oranges to each tree, and these will sell readily at one-and-a-half to two cents each, purchaser paying for picking and packing. This in a grove of one hundred trees would give from twenty-two-and-a-half to forty dollars per tree per annum, or $2250 to $4000 per acre—100 trees per acre. The orange tree, if properly cared for, will continue to grow and bear *ad infinitum*. I have seen trees, said to have been one hundred years old, that yielded annually from 7000 to 10,000 marketable oranges. Can the same space of ground planted in any other article, be made to give a greater return in money value for the same outlay of capital and labor?

"Take a piece of wild land; say its original cost is ten dollars per acre; to put it in proper condition for successfully growing the orange, say will cost (grubbing, ditching, ploughing and fencing) $100 per acre; say original cost of one hundred trees and putting them out, one dollar per tree, on one acre $100; thus making one acre in an orange grove cost $200. If put out in budded trees will give something for market the third year; if in Seedlings about the fifth year. During which time the same land can be advantageously cultivated in corn, peas, potatoes, and all kinds of melons and garden vegetables for family use. The labor necessary to cultivate these articles can give the orange trees all the attention they will require; and at the end of ten years there will be an income of $1000 to $2000 per acre; as secure as the best bank or railroad stock in the country."

Commercial Manures for Gardens.

As a rule, we believe that the best of all manure for the kitchen garden is such a compost as the skilful gardener can make on the premises. With the products of the earth-closet, (which should be universally adopted,) the droppings from the fowl-house, the ashes and the soot, the refuse of the kitchen and the garden, the slops and the soapsuds all carefully saved and judiciously used, a large garden may be kept in the highest state of fertility without buying manure of any kind. The commercial fertilizers are, however, often found valuable auxiliaries, and we are often asked how and in what quantity they may be most advantageously applied. The question is too general to be satisfactorily answered. It depends upon circumstances.

Where other manure is used, we have found no better way than to compost the fertilizer with such a portion of it as we might wish to apply to a particular compartment or crop *at the time of planting*. In such cases, the ground having previously had a good dressing of manure, turned deeply in, we use for a top dressing, to be harrowed or raked in and thoroughly mixed with the surface soil, from four to six quarts of some good superphosphate to the square rod. Where no other manure is used, at least twice this quantity should be applied, one half at the time of planting, and the remainder at the first or second working.

For squashes, melons, and cucumbers, apply a handful of the fertilizer to a hill, thoroughly mixing it with the soil, then drop the seed. At the first hoeing apply a handful to a hill as a top dressing. This will fertilize the growth, so that the fruits will come quickly to maturity.

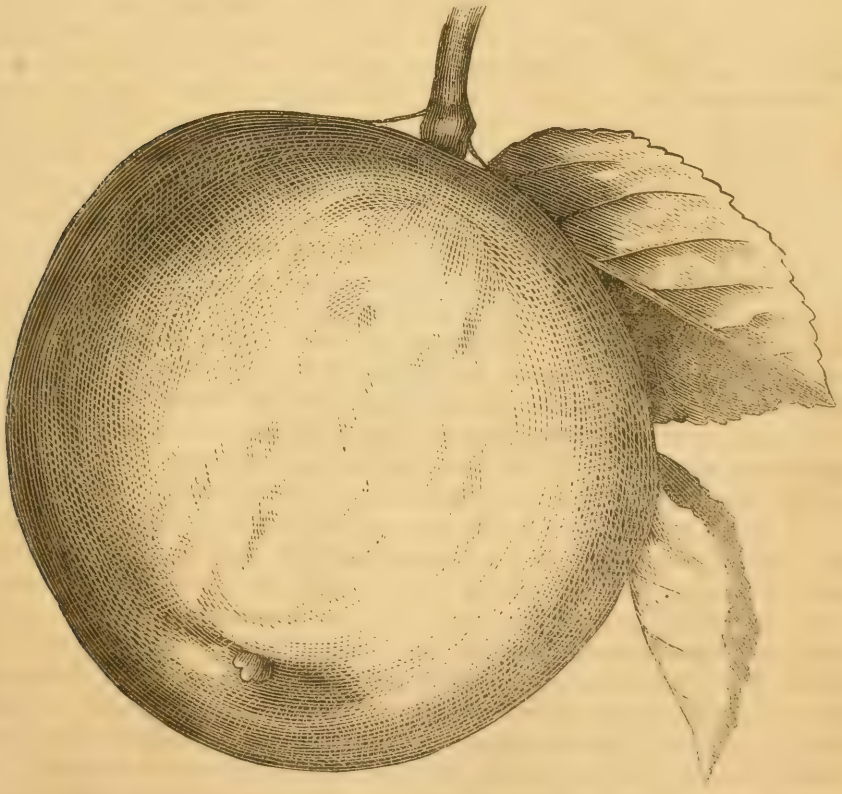
In planting cabbages, egg-plants, and tomatoes, apply a handful of bone

dust and superphosphate to a plant at the time of transplanting; cultivate thoroughly, and apply the same quantity as a top dressing.

For strawberries, mix the fertilizer thoroughly with leaf-mold, or any well decomposed vegetable matter, and scatter along the rows, if grown in that method, or sow broadcast over the bed. From four to six quarts of a good phosphate fertilizer to the square rod will be sufficient. It should be applied during the winter in this climate.

The phosphatic fertilizers are excellent for fruit trees. Apply to the surface, and dig in lightly with a pronged hoe, proportioning the quantity to the size of the tree and the previous condition of the soil.

Maverack's Sweet Apple.



This excellent Southern apple is thus described by Mr. White, in the first edition of his "Gardening for the South:" "Very large, roundish, irregular, sometimes slightly conical, striped with bright red, sprinkled with greenish flecks. Stem, short, in a rather large, regular cavity. Calyx, open. Basin, medium. Skin, rather thick. Flesh, fine grained, tender, of sweet, excellent flavor. Ripens, November and December."

An Experiment with the Banana.

As the cultivation of tropical and semi-tropical plants in the South is attracting a large share of attention, I propose to state my experience with the *banana.*

The terminal line of frost is one hundred miles south of this point. Snow is rarely seen here, but there are during the winter months heavy white frosts. Occasionally, ice is formed to the thickness of from half an inch to an inch, and the surface of the ground frozen to the same extent. The cold spells are few and of short continuance, the atmosphere being generally warm and pleasant. Under these conditions it was not expected that the banana could be grown as a matter of profit, but being a beautiful and ornamental addition to our grounds, it was determined to see what could be done. Having ascertained where a young shoot could be procured, we set about finding out all in our reach as to the nature of the plant.

Its native soil is low, damp and hot, and the plant itself is porous, watery and spongy, indicating its need of water, and its love for a half-swampy soil. Here it had to be grown upon a light, dry, sandy soil, and needing protection at least four months in the year. The work was commenced by making an excavation in the sand eight feet in diameter. The surface soil was thrown to one side, about eight inches being thus disposed of. The balance of the ground was then dug to the depth of five feet and the sand carted off the grounds. A compost heap, composed of equal parts of swamp muck and stable manure, was then formed on the margin of the opening. When this was cured by fermentation and heating, and had become thoroughly rotten, a small quantity of fertilizers were added, and the whole mass thoroughly mixed and pulverized. The entire expense being about five dollars. This mass was turned into the excavation, and was slightly tramped when put in so as to avoid settling. A young plant two feet high was planted in the centre, and the ground to the depth of a spade was kept well pulverized and clear of weeds, and about three dressings of well rotted manure worked in. In winter the plant, with the suckers that came up around it, were covered to the depth of two or three feet with pine-straw; above this the plants were wrapped with gunny sacks, leaving an interval between the sacks and the plants of about four inches, which was carefully packed with moss, or fine grass well dried; the top was covered in the same way, and there was added a covering of pine-straw to keep the cold rains from the plant. In warm weather the bottom covering being left loose, was thrown back so as to admit air and light to the plant to prevent mildew and rot; when it turned cold this was thrown back to its place. The central stock, the parent one, has now upon it a fine bunch of bananas that will mature by the middle of November, and before the plant will need recovering, and there are five side stalks or suckers that will bear four bunches next summer. The leaves are very beautiful, the top ones seven feet long and two feet across, and the stem, with projecting leaves, is thirteen feet high. Independent of the pleasure arising from eating bananas plucked

ripe from the plant itself, it is more beautiful and ornamental than any evergreen, and is a constant source of wonder and admiration to strangers, who are naturally astonished at finding the banana flourishing so luxuriantly in this latitude.

Pensacola, Fla. J. DENNIS WOLFE.

The Running Mango (Sechium edulis.)

This is another of the plants which should be better known wherever the seasons are sufficiently long for it to mature its fruit. Just how far northward its cultivation may be extended, we cannot say, but probably not beyond the cotton belt of the Southern States.

The Running Mango, which must not be confounded with the Mango melon or with the tropical fruit to which the name Mango rightfully belongs, is a rapidly growing vine, a single plant of which will soon cover a large arbor or trellis. It was introduced from the West Indies, and is very generally cultivated in Charleston and vicinity, where it appears, in its season, among our market vegetables. It does not commence blossoming till August or September, but the fruit grows rapidly, and the vine furnishes an abundant harvest, continuing to bear till cut down by frost. From eight to ten bushels are sometimes gathered from a single vine. The fruit is somewhat pear shaped,

from three to four inches in diameter, and of a light green or a whitish color, according to the variety.

Its native habitat is the rich alluvial soil of tropical river bottom lands, and in our dry gardens should be frequently watered during the summer.

One vine will last from three to four years—springing afresh every spring, if the roots are kept protected from the cold by straw during the winter. The fruit is a most delightful esculent, being more delicate than the squash, which it resembles in flavor. It can also be prepared like the Guinea squash, and makes a most excellent pickle. The fruit can be kept and used all the winter as needed, by storing in dry sand, and keeping in a cool place.

Directions for the cultivation of the Mango may be found in The Rural Carolinian, Vol. I., p. 422, (April 1870.)

Horticultural Miscellany.

CLIMBING PLANTS FOR WINDOWS.

Ivy may be trained about your picture-frames, to creep over the mantel and windows, or to form a border of the paper around the room, close to the ceiling. The most brilliant flowers do not give so pretty an effect to a room as a thrifty climbing ivy. Moneywort, Wandering Jew, myrtle, etc., grow well when hung in the window, and the effect of the gracefully drooping sprigs is extremely pleasing both outside the house and in it. For hanging vases, you can make yourself highly ornamental ones. Bread-baskets, sea-shells, with three holes drilled for a cord, are very pretty; a common wooden-chop basin, covered with little knotted branches, gnarled joints, dried fungi, the whole highly varnished, is as picturesque and ornamental a vase as can be desired.

THE BONNET GOURD AS AN ORNAMENTAL PLANT AND AN ESCULENT.

A good deal was said, in our pages last season, about the Bonnet Gourd several correspondents speaking highly of it, both as an ornamental plant and as an esculent. Having grown it during the present season, we can add our own testimony in its favor. For covering a large arbor, a fence, or a tree, it is one of the most effective climbers we have. Its brilliant yellow flowers, and its long, ribbed fruit hanging from a tree, in the midst of its bright green foliage, make a very fine appearance. The fruit, when young and tender, may be served like the cucumber, for which it is a very good substitute, or boiled and eaten with butter, like the Summer Squash. Try it.

THE KAURI PINE OF NEW ZEALAND.

Mr. W. T. Harding writes to the *Gardner's Monthly* about the Kauri Pine (*Dammara Australis*) as follows:

"My object was chiefly to see the Kauri Pines, and I shall never forget the impression then made whilst viewing so strange a scene. The Kauri, (so unlike other conifers,) reared its tall shafts from 100 to 150 feet high, without a mark of ever having had any lower branches, so smooth was the bark up to 80 or 90 feet e'er a branch could be seen. Their calibre was nearly uniform—about twenty-eight feet, irrespective of height of the matured tree. To get a correct idea of their foliage, which could only be seen on the seedlings, thinly scattered around the outside of the main groups, the nearest comparison I can give is the *Laurus Camphora*, or Camphor Tree, only with larger and broader leaves."

THE RURAL CAROLINIAN.

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"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

THE RECENT FAIRS.

It is generally admitted, we believe, that the fairs of the present season throughout the South have shown a decided improvement over those of last year. This is encouraging, and permits us to indulge a hope that the time is not distant when the managers of these gatherings will be able, without endangering their pecuniary success, to discard those questionable expedients for drawing a crowd, which now detract so much from their moral tone and real usefulness.

We purpose to speak editorially of those fairs only which we had the pleasure of attending, regretting that these number only two.

THE COTTON STATES FAIR.

The Fair of the Cotton States' Agricultural and Mechanical Fair Association, at Augusta, Ga., presented some excellent points, in which it may be held up as an example for other similar gatherings. In the first place, the grounds were selected, laid out and adorned with good judgment and fine taste. The fair buildings are also well adapted to their purpose and picturesquely grouped. Secondly, there was evidence of business-like management both in the general arrangements and in the working of the various departments. There was no jostling, no clashing, no vexatious delays, and no changing of programme. Once set in motion, everything moved like clock-work, showing that there was organizing and executive talent at the head of the Association, and in its different branches.

The exhibition was well arranged and interesting, but not extensive. Of farm produce, there was but little. The show of agricultural implements and machinery was pretty good, and we were glad to see that it attracted its share of attention. The flouring mills of Augusta, (famous for their excellent flour,) and several cotton manufacturing companies made fine displays of their manufactures. The most interesting and beautiful part of the exhibition, however, was the horticultural department, superintended by Mr. P. J. Berckmans. The collection of fruit was not large, but it was handsome and creditable to the country. The display of flowering and ornamental foliage plants was the finest we have seen in many years. This was really the strong point of the whole exhibition, and doubtless owed its attractions mainly to the resources, taste and skill of Mr. Berckmans. Fine specimens of fruit trees were exhibited by P. J. Berckmans and Wm. K. Nelson, of Augusta.

There was the usual tournament and the never-absent horse-racing, etc., about which the less we say the better for all concerned.

Too much cannot be said in praise of the cordial kindness and spontaneous hospitality of the people of Augusta, who spared no pains to make their visitors comfortable, and the visit one to be remembered with pleasure.

SOUTH CAROLINA INSTITUTE FAIR.

The Fair of the South Carolina Institute, at Charleston, achieved a success which was the more gratifying on account of the difficulties under which its managers labored, and the obstacles which were overcome. The exhibition, though less extensive than we could have wished, exceeded our expectations. Our brief space excludes any attempt at a detailed description. In the departments coming more particularly within our province, we made many notes, of which our readers shall have the benefit as occasion may offer. In the meantime, a brief men-

tion of a few matters of special interest is all we can make room for.

The display of implements and machinery was good, including a magnificent stationary steam engine of eighty horse power, constructed for the Wando Mining and Manufacturing Company by Messrs. J. M. Eason & Brother, of this city. Our townsman, Mr. W. S. Henerey, exhibited an engine in operation, furnishing motive power for several cotton gins, cotton seed hullers and other machinery.

Of the short cotton gins, Gullett's seemed to us to be, on the whole, the best, though Griswold's works well and has its good points. For long cotton, McCarthey's took the premium. In cotton presses there was a spirited competition. The premium was awarded to the Virginia Cotton and Hay Press of Messrs. Tappey, Lumsden & Co., Petersburg, Va. The celebrated Utley Press had many admirers; and the new Deering Gin House Cotton Press attracted attention as a simple, strong and rapid machine.

Shaw's Cotton Seed Huller attracted universal admiration, and received the premium.

Of Cotton Planters we observed only one on exhibition—Carroll's, a cheap, simple and effective machine, which deserves to be better known.

The rice planting interest was not neglected. McSherrie's Rice Trencher and Sower, Waggoner & Matthew's Rice Drill, the Rice Bird Reaper, and King's Ditch Cleaning Machine, were all on the ground. The last named is a new invention, and, apparently, a good one, exhibited by our neighbor, Mr. Graveley.

For grain, we had the Farmer's Favorite Grain Drill, with a guano attachment, and Cahoon's Broadcast Hand Sower, both of which are well known and approved. Hay cutters and corn shellers were in great variety.

Of ploughs, harrows, and cultivators, there was an excellent assortment, and in the case of the ploughs, a lively competition. Of them, and the ploughing match, we propose to speak elsewhere.

Of hand implements there was a good assortment, but we have not room to specify them, except Leed's Champion Hole Digger, (J. E. Adger & Co.,) and Elerbee's Transplanter, (S. R. Marshall,) to both of which we desire to call special attention, as most useful inventions.

Of farm and garden produce, the display was meagre. Mr. Wm. Summer's fine Hebe Pears were the only specimens that even hinted at the existence of such a thing as Southern Pomology, though a banana tree, with full grown fruit, exhibited by Miss Wagner, of this city, indicated something of the wonderful capabilities of our climate. A basket of beautiful mangoes, by Miss L. A. Bull, fitly represented our semi-tropical vegetables.

The exhibition of stock was also small, but it included some fine mules, cattle, and hogs. Of the last named, the Chester White sows of Messrs. E. L. Roche and C. B. Sigwald, of this city, and the pigs of Mr. Thomas Wood, of Doe Run, Pa., attracted much attention.

Among the awards, we notice, with pardonable pride, that of a diploma to THE RURAL CAROLINIAN, as the best Southern Agricultural Magazine.

The attendance was good throughout, but the tournament, as usual, drew the largest assemblage. The utmost good order and harmony prevailed, and every one seemed pleased and satisfied. It was a good beginning, but we shall do better next year.

A member of our "House," who represented THE RURAL CAROLINIAN at the State Association—our informal Legislature—adds the following notes of

THE COLUMBIA FAIR.

The Fair of the South Carolina Agricultural and Mechanical Society was held at its grounds, in Columbia, S. C., November 9th–11th, and was in every respect a grand success. The display of cotton presses and stock was especially good. It was a matter of some surprise that so good a show of horse flesh was made, when we consider the desolation and ruin which overspread our State five years ago. The fruit of our agricultural labors, as shown at this Fair, is an evidence of the recuperative energy of our people, and proves, beyond a doubt, that our destinies are in our own hands, and that if we put our shoulders to the wheel we can accomplish great results.

The assembly of the Legislature, in *ante bellum* times, afforded the opportunity for peo-

ple from all sections of the State to meet and interchange experience and thoughts. This opportunity no longer exists. We must have our State gatherings, and the fairs are the occasions now selected.

It is pleasant and profitable to have these meetings; and, if the State Fairs accomplish no other good, they will be exceedingly valuable in this way. We are pleased to receive again the endorsement of the State Association for our magazine. THE RURAL CAROLINIAN has been awarded a silver medal as the best Southern Agricultural Magazine. We feel flattered at the distinction conferred, and will endeavor always to merit it. W.

PLOUGHS AND PLOUGHING.

There have been wonderful improvements in ploughs during the last few years, and we were therefore glad to avail ourselves of the opportunity afforded by the Ploughing Match at the Fair Grounds to see some of the best modern implements tested. It was, to us, the most interesting feature of the week's entertainment, made more so by the presence of some of the most prominent manufacturers of ploughs and an active competition among their agents here.

The first match was for the premium offered for "The Best Two-Horse Plough," and the following entries were made:

The Excelsior Plough, by Messrs. C. Kerrison, Jr. & Co.

The Dodge Plough, by S. R. Marshall, Esq.

The Watt Plough, by Messrs. J. E. Adger & Co.

The Collins Plough, by Messrs. J. E. Adger & Co.

The Brinley Plough, by C. Graveley, Esq.

The ploughs were tried both on clear, smooth ground, and on rough, grassy ground, and their capacities as thoroughly tested as a single kind of soil (a sandy loam) rendered possible. Some good work was done by each of the ploughs; but the superiority of the Watt, for that kind of soil at least, and especially for grassy land, (it clogging very little,) was apparent to all. A portion of its success, however, was due to the skilful handling it received, Mr. Watt himself being the ploughman. The Watt Plough received the premium.

The second contest was for the premium offered for the best one-horse plough. In this match, in which the Brinley, the Dodge, the Collins and others were entered in competition, the Watt was again victorious.

Mr. Graveley exhibited, but not in competition, Hornsby's Patent English Plough which did excellent work. We should be glad to see it more fully tested on different kinds of soil.

For the premium for the best gang plough, there were only two entries—the Collins Gang Plough, entered by J. E. Adger & Co., and the Black Gang Plough, entered by Mr. W. S. Henerey. We were particularly pleased with the rapid and excellent work performed by the former. The Black Plough was a heavier implement, however, and cut a deeper furrow, as there worked. It received the premium.

In harrowing, excellent work was done by both the Monroe Rotary Harrow and Nishwitz's Pulverizing Harrow, of both of which we shall have more to say in a future number. The Nishwitz took the premium.

The Excelsior Cultivators, No. 1 and No. 2, took the premiums offered for the best one and two-horse implements respectively.

THE AGRICULTURAL CONGRESS.

During the late Fair at Augusta, a body of able and earnest representatives of the great agricultural and mechanical interests of the South and West assembled for deliberation upon the ways and means of promoting the prosperity of the country through its farming and manufacturing industries. A permanent organization was effected under the name of "The Agricultural Congress," and Hon. H. V. Johnson, of Georgia, was elected President. Committees on various subjects connected with the objects of the organization are provided for, and are to report at the next annual meeting, which will take place at Selma, Ala.

The Agricultural Congress has our most cordial good wishes, and may command whatever influence we may be able to exercise in behalf of its objects; but we confess that we left its late session with a feeling of disappointment. It covers, we think, too much ground, has adopted a too complicated and expensive organization, and has laid out for

itself too much work. Its wisest members did not, we fear, obtain a fair hearing, while too much of its time was taken up with tiresome discussion and irrelevant oratory.

The University Publishing Company, (No. 4 Bond street, New York,) has issued the third edition of Henry Lee's "Memoirs of the War in the Southern Department of the United States; edited with a Biography of the author, by Robert E. Lee." The death of the lamented editor renders the work now doubly interesting, and gives it the character of a memorial volume. Its intrinsic value as a contribution to the history of the Revolution, should, however, be a sufficient recommendation. It is handsomely illustrated.

We are greatly indebted to Harry Rivett-Carnac, Esq., Cotton Commissioner for Central India, for his "Report of the Cotton Department for the year 1868–'69." It is a document of great interest, and contains important information, of some of which we intend to give our readers the benefit in a future number. The author will also please accept our thanks for the kind terms in which (in a private letter) he is pleased to speak of THE RURAL CAROLINIAN.

FARM AND GARDEN NOTES.

Preparing Bones for Manure.

Dr. James R. Nichols, of the *Boston Journal of Chemistry*, recommends the preparing of bones for use as manure, by dissolving or saponifying the gelatinous portions by the employment of caustic alkalies. For this purpose, take one hundred pounds, beaten into as small fragments as possible, and pack them in a tight cask or box, with one hundred pounds of good wood ashes. Mix with the ashes, before packing, twenty-five pounds of slacked lime, and twelve pounds of sal soda, powdered fine. It will require about twenty gallons of water to saturate the mass, but more may be added from time to time to maintain moisture. In two or three weeks the bones will be broken down completely, and the whole may be turned out upon a floor, mixed with two bushels of dry peat or good soil, and after drying will be fit for use.

The Castor Oil Plant.

Several specimens of the red Palma Christi, or Castor Oil plant—(*Ricinus sanguineous,*) planted in our yard last spring, have made a growth of about sixteen feet in height, and present a magnificent appearance. Plants of the African species (*R. Africanus*) have made nearly as large a growth, but are not so handsome. As an ornamental plant, where there is sufficient room to allow their proper development, and a fair display of their beauties, we know scarcely anything finer or more tropical looking than the Castor Bean; but, to produce the best effect, several species should be judiciously grouped. It certainly rivals the banana in beauty of foliage. The flowers are inconspicuous, but the red seed burrs of the *Sanguineous* add much to the attractions of the plant.

Ramie Culture in Louisiana.

A company has been formed in Louisiana, and incorporated under the general laws of the State, for the purpose of cultivating the ramie extensively. A part of the Poydras Plantation, in the Parish of St. Bernard, has been secured as the field of its operations. This is a step in the right direction, and will test the practicability of ramie culture, as no individual could so readily do. We hope the experiment will prove a successful one, and a new industry be fully established in the South.

The Oil Nut Shrub.

There is an interesting and perhaps important shrub, formerly abundant in portions of North Carolina, and probably still to be found there, called the Oil Nut, (*Pyrularia oleifera.*) It grows to the height of from five to ten feet, and bears a pear-shaped fruit, which is so oily that if a wick be drawn through it, it will burn like a candle. It is said that the oil when expressed is superior to olive oil. May we not have here an undeveloped resource? Cattle and sheep are fond of the leaves and tender branches of the *Pyrularia*, and it is in danger of becoming extinct from being destroyed by them. Can some of our friends in North Carolina send us one or more of these shrubs?

Sugar Culture and its Profits.

An acre of good land in Louisiana will yield

60,000 pounds of cane, producing 48,000 pounds of juice, and 1,950 pounds of sugar, which at 10 cents per lb., which is below the present market price, would yield $195, besides the molasses.

A plantation, near Donaldsville, which had been worked for seventeen years, of between 700 and 800 acres, yielded in 1858 1,002 hogsheads of sugar, which was sold, with the molasses, for $80,747.94. In 1869 the same plantation yielded 430 hogsheads of sugar, which brought $71,760.

Plants from Cuttings.

Cuttings should now be made from the ripe wood of various trees, shrubs and vines for the purpose of propagation. The following among others may be readily grown in this way: Abele, Althea or Rose of Sharon, Currant, Deutzia, Euonymus, Fig, Forsythia, Fringe-Tree, (purple,) Grape, Honeysuckles of various species, Hydrangea, Orange, Oleander, Privet, Platanus or Buttonwood, Populus of many species, Peach, Pomegranate, Spirea, Syringa, Tamarisk, Viburnum, including the Snowball and High Bush Cranberry, etc., and the various Willows.

Rice Grass or "Nimble Will."

In the *Southern Agriculturist* for January, 1835, C. C. Pinckney narrates his experience in making hay from Rice Grass, (*Leersia oryzodes*,) which seems to prove that on low moist grounds—too moist for corn—this grass may be very profitably grown, two good hay crops annually being taken from the same ground. It is a fine grass and makes good hay. Have any of our readers any experience with it?

Cure for the Botts in Horses.

Take a ripe gourd, cut it open and take out the pulp and seeds together. To one pint of this pulp add three pints of water, and boil till the water is reduced to about a pint; strain and add a pint of molasses. When cool administer one-half of this mixture as a drench; repeating the dose, if necessary, after a few hours; but one dose will generally cure.

A Red Cucumber.

Dr. Livingstone, in his "Africa," speaks of a red eatable cucumber, often met with in that country. It is about four inches long, and about one and a half inch in diameter. It is a bright scarlet color when ripe. This is perhaps the "Banana Cassa," (*Beni Cassa?*) of the New Orleans markets.

SCIENTIFIC NOTES.

Protection from Malaria.

According to a writer in a recent number of *Nature*, mosquito-netting furnishes a good protection against malaria. He claims to have had experience in the jungles of Ceylon, in Africa, and in New Zealand, and to have found that he was thus protected from damp, chill, malarious air. The heat within the netting would differ by eight degrees from the night air without. He likens the operation of the netting to that of Davy's Safety Lamp. As it has been recently asserted that cotton has the power of detaining the poisonous germs which float in the atmosphere, there may be more foundation to this theory than the mere experience of one man.

The Cause of Sleep.

Dr. E. Sommer, a German physician of note, has promulgated the theory that sleep is simply the result of a deoxygenation of the blood and tissues of the body. According to him, these organisms possess the property of storing up the oxygen inhaled, and then supplying it in proportion to the requirements of the economy. When this store of oxygen is exhausted, or even becomes too small, it no longer suffices to sustain the vital activity of the organs, the brain, nervous system, muscles, etc., and the body falls into that particular state which we call sleep.

A Fact about Figures.

Any number of figures you may wish to multiply by 5 will give the same result if divided by 2—a much quicker operation; but you must remember to annex a cipher to the answer when there is no remainder, and when there is a remainder, whatever it may be, annex a 5 to the answer. Multiply 464 by 5, and the answer will be 2,320; divide the same by 2, and you have 232, and as there is no remainder, you add a cipher. Now take 359—multiply by 5, the answer is 1,795; on dividing this by 2 there is 179 and

a remainder; you therefore place a 5 at the end of the line, and the result is again 1,795.

Cotton Lint vs. Contagion.

Contagious and epidemic diseases are now believed by scientists to be caused by living organisms which float in the air in the form of fine dust. These organisms enter the human system through the breathing passages and lungs, germinate, and spread over the body with astonishing rapidity. Professor Tyndall, of London, recommends the use of filters of cotton wool, to be so applied to the nostrils as to cause the air to pass through the cotton, thus effectually arresting the infectious dust.

INDUSTRIAL ITEMS.

The American Grocer expresses the opinion that there should be a large amount of all kinds of canned fruits, vegetables, fish and meats, put up throughout the Southern States. The *Grocer* is right. It adds:

"What the South needs is a variety of industries to develop all its resources. In none is it richer than the bounteous yield of its soil, its rivers and bays. Texas beef should be as widely known as that of Australia or South America; Savannah shad should have a reputation equal to California salmon; Bon Secour oysters should stand alongside Saddle Rocks or Chesapeake Bays. Southern roasting ears should be as highly esteemed above Portland green corn as Southern meal is above that of Northern. Southern dried figs should be as eagerly inquired for as those from Smyrna."

——The new process for making turpentine, which consists in charring wood in a retort, bids fair to supersede the old and wasteful method entirely. The production from a cord of wood is said to be ten gallons of turpentine, worth four dollars; eighty gallons of oil, twenty-eight dollars; fifteen gallons of black varnish, seven dollars and fifty cents; one hundred gallons wood acid, five dollars; and forty bushels of charcoal, besides considerable inflammable gas; but not including this, the product has a market value of forty-eight dollars and fifty cents; all of which is obtained at a cost for wood and labor of ten dollars.

——*The Boston Journal of Chemistry* notes as a significant fact, that notwithstanding that a million of soldiers belonging to the French and Prussian armies have been trampling down and laying waste the magnificent vineyards in the great champagne district around Rheims, Epernay, etc., the price of the wine has not been affected in the least in this country. "The truth is," adds the *Journal* "in the manufacture of the beverages now sold as wine, the juice of the grape is of no account, and we suppose if the vintage should utterly fail abroad for twenty consecutive years, the supply of *wine* would not in the least diminish."

——The steam plough is successfully at work on a sugar plantation in Cuba, and the proprietor writes that on his estate it has already doubled the value of the lands, repeated deep ploughings having rendered what was formerly—partly through nature, and partly through a false system of cultivation—little better than an impervious marsh, a fine, porous, fertile soil.

——The North Carolina cheeses exhibited at the Charleston Fair attracted much attention, and were pronounced of superior quality. Our mountain regions are beginning to be recognized as the true dairy region of the Continent. The milk produced there is richer than that of the North, and gives a higher percentage of butter as well as cheese.

EXCHANGES.

The Banner of the South and Planters' Journal, (Augusta, Ga., Chronicle Publishing Company, $3 a year,) adds another to the number of literary and agricultural journals of the South, and commences its career in a way which indicates success. It is well edited and has an excellent corps of contributors.

—— We miss from our table *The Overland Monthly*, one of the most racy and readable magazines in America, and coming fitly from the shores of the Pacific. Please don't cut us off. (A. Roman & Co., San Francisco, Cal., $4 a year.)

—— *The Practical Planter*, Memphis, has changed hands. It is now published by Thomas Darden & Co., and edited by that well known, progressive agriculturist, and somewhat caustic writer, George W. Gift, Esq.

—— *The Farmer and Artizan*, Athens, Ga., (S. A. Atkinson, Publisher, $3 a year,)

is edited by that well known agricultural writer, Dr. Daniel Lee, assisted by M. C. Fulton and S. A. Atkinson. We are glad to see evidences that it is securing something of the success it richly deserves.

—— Thank you, friend Burke, of *Burke's Weekly, for Boys and Girls*, for your friendly notice. Yes, we remember that trip to Tallulah and Naucoochee, and other pleasant times of "long ago."

—— *The American Naturalist*, (published by the Peabody Academy of Science, Salem, Mass., $4 a year,) is a scientific and popular illustrated magazine of natural history, of which our country may well be proud. It is full of interest and always instructive. Tha November number has an excellent article on "Marine Fishes."

—— *Appleton's Journal*, from its commencement one of the best literary and scientific journals ever published in the United States, presents, just now, a new attraction in the form of a series of illustrated articles, entitled "Picturesque America," the first of which, "A Journey up the St. John's and Ocklawaha Rivers, Florida," appeared in the number for November 1st. The sketches of Florida Scenery (by Harry Fenn) are admirable.

MERE MENTION.

C. M. Pennington, of Rome, Ga., has invented a combined plough and planter, which he calls the Cherokee Chief. According to the inventor's statement, "it lays off, subsoils, opens out, distributes the guano, makes the bed on it, opens the top of the bed, drops the seed and covers it, all in one operation.

—— There is to be an effort made to utilize the peat bogs of the Edisto. At Meriden, Conn., there are large works in operation, in which peat is prepared at a cost of two dollars a ton, in such a way as to be equal, it is said, to the best hard wood.

—— The pecan crop—very promising some time ago in Texas—has been cut short in some localities by dry weather.

—— A farmer in Boone County, Mo., says his oat ground, ploughed in the fall, produced one-third more than that ploughed in the spring.

—— A correspondent writes that, from some cause—either the drouth or the ravages of the black caterpillar, which are abundant this year—the oak trees in Surrey, Co., Va., are dying rapidly. Would it not be well for us to pay some attention to forest culture before it is too late?

—— At the Atlanta Fair, the sub-soil plough of Col. J. G. Miner, of Nashville, took the premium, greatly distancing all competitors. We regret that it was not brought to Charleston for trial.

——On General Vallejo's grounds, (Vallejo, Cal.,) is a cactus hedge nine feet high, and impenetrable to any living animal.

——Grape growers in California get only from one-half cent. to two and a half cents per pound at wholesale for their grapes.

—— In Sonoma Valley, California, there are said to be now growing every known variety of grape of any value from Europe, Asia and America, numbering at least three hundred named kinds.

—— The amount received for flowers sold in New York for Christmas and New Years' holidays is put down at $150,000; and the amount of the whole year at $1,000,000.

—— The editor of the *Horticulturist* don't speak very flatteringly of the pomegranate, as he found it in California, the tree being very homely and the fruit nauseous. Those terms certainly do not apply here.

—— Broom corn was introduced into America by Dr. Franklin, by means of a simple seed which he discovered on an imported broom.

—— Our correspondent, C. B. Denson, of Pittsboro', N. C., has an interesting paper in the November number of *Tilton's Journal of Horticulture*, in which he gives a list of flowering plants for summer blooming in our hot, dry climate, when our gardens are generally so desolate.

—— The Chinese Wistana was introduced by the London Horticultural Society, in 1818. The first living plant received is now an aged tree in the Society's garden.

—— The first "Patron of Husbandry" was St. Fiacre, the patron saint of gardeners, who is said to have died about the year 670.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

EXPERIENCE WITH FOWLS.

Editor of The Rural Carolinian:

Having noticed, in several numbers of your valuable magazine, various articles on imported fowls—their good qualities, and as my experience with several varieties conflicts somewhat with that of some of your writers, I will give you a true account of various breeds as they have proven with me.

Last year I sent North and procured a "half sitting" of Brahma, Java, Spanish, Creve-Cœur and Game eggs. Out of some forty eggs twenty hatched, and out of that number I raised eighteen chickens. I found no difficulty in raising any except the Brahmas, which I found to be very delicate until several weeks old. They are a very fine chicken, my hens being equal in size to the common turkey hen. My Brahma cock, while standing erect, is over three feet tall, and of a prodigious size. This breed lays a large yellow egg, and began when about eight months old. They are a very domestic fowl, and have no desire to roam.

The next in size is the Creve-Cœur. Though not as large as the Brahma, yet are equal to them in every other respect. They mature much earlier, and begin to lay much sooner than the Brahmas. They are non-sitters, and mine have been laying regularly for several months. They are a beautiful fowl, and that large crest gives them rather a picturesque appearance.

We are all acquainted with the good qualities of the Game, therefore I will say but little about them. I find the Derby Game to be the best, and the only objection I have to them is their great propensity for fighting. You will find they lay a great many eggs, and are good mothers.

I like the Java very much, though they cannot begin to compete with the Brahma or Creve-Cœur. They were fully nine months old before they began to lay. Their eggs are of a rich cream color.

My Spanish are inferior to all of the above-named fowls, being fully twelve months old before they began to lay. The portrait in your recent number is the *fac similie* of mine. I find no superior quality in this breed, unless it is in the size of their eggs, which are very large, and they are purely white.

I keep my chickens separate, consequently have the full blood of each kind. I have also a cross between the Brahma and Game, and Brahma and Creve-Cœur, which are very fine.

I prefer the Brahma and Creve-Cœur. I do not think there is another breed that can compete with them in size, and at the same time possess as many good qualities as they do.

L. H. L.

Marion, S. C., May, 1870.

SCIENTIFIC EDUCATION.

We are pleased to learn that there is a prospect of the establishment of a scientific school of the highest character in Oconee County. Hon. Thos. G. Clemson writes us as follows concerning it:

Editor of The Rural Carolinian:

The County of Oconee is a unit for technical instruction as a necessity of the times; they are moving with spirit, and will be the first to accomplish an object which is of paramount importance to South Carolina and the entire South.

Technical education is the corner-stone of prosperity, and there is no hope short of that commencement. Our upper country would long since have been settled with men from the North who would have brought skill, population and money, could they have been ensured that their children would have been able to secure the advantages of scientific education. A man would be a fool to come from Pennsylvania, where science is taught (practically and theoretically) gratis, to South Carolina, where even he can buy land which will yield a greater profit at from ten to twenty dollars per acre, and sell his land in Pennsylvania at from three to four hundred dollars the acre. If we had good schools (technical) we should not find it necessary to be calling up conventions, talking about improvement, etc., etc., all that is but a superstructure, and would follow with increased rapidity had we good educational advantages

Demagogues prosper most where ignorance most prevails. "*Dans la loy aume des avengles les borgnes sont des lois.*" There lies an explanation for all our ills.

The ball is in motion, and I trust and confidently hope that it will roll. I will venture to predict that if Oconee County establishes a good technical school, as I believe she will, it will be one of the largest—the best paying school in the entire South. Already they are receiving donations. Col. Jas. Ed. Calhoun donated one thousand acres of land, choice out of 10,000 acres.

Thos. G. Clemson.

Pendleton, S. C.

BOTTS IN HORSES.

Editor of The Rural Carolinian:

In the October number you ask for a cure for botts in horses. I will give you the following as having been tried both by myself and others, and to my knowledge always proving successful. If the horse is suffering severely give him one-half ounce of chloroform in half a pint of warm water, to be repeated in one hour, if the first dose does not have the desired effect. After he is relieved, allow him to stand up in the stable without either food or drink for twelve or fourteen hours and then drench him with from one and a half pints to a quart of linseed oil, and I will guarantee a cure in every case. Of course they may again become troublesome, but the above will relieve for twelve months, at any rate, if not longer.

M.

TRIAL OF SEEDS.

Editor of The Rural Carolinian:

In compliance with your request, I will report the results of a trial of the seeds received from your office:

Parsnip Rooted Chervil. — Seeds planted March 22d. Ground well prepared. Compost manure, covered very lightly. *None germinated.* [Our experience was the same. —Ed.]

Crimson Cluster Tomato. — Seeds planted March 22d. A few came up. Fine large plants. Fruit good. Not very prolific. See no difference between this and several other varieties.

Casaba Melon.—Seeds planted April 24th. Came up well. Not a vigorous grower. Full bearer, but fruit not yet ripe. *I think this an old variety with us.*

B. W. Jones.

SPRING BUDDING.

Editor of The Rural Carolinian:

I think the old custom of spring budding may be revived among fruit growers with good results thus (⊥) the T inverted and the bud sliped in from below.

The advantages claimed for it arise from the fact of the sap rising in the spring the bud takes more readily. The same virtue claimed for the T in fall budding.

That subject of the flow of sap in trees is one I would like very much to see discussed in your magazine. I think farmers generally entertain erroneous ideas in regard to it. And it is certainly of great importance to fruit growers.

Subscriber.

A SUGGESTION.

Editor of The Rural Carolinian:

Would it not be well for every county in the South to form a joint stock manufacturing company, in connection with their agricultural and mechanical societies (or separate if you choose). Can it not be done without cost to the South? I think it can, if I am to believe the statements I saw a few weeks ago in one of our papers where two lots of cotton had been spun at the South, netting the owners four and a half and five cents a pound clear profit. Would not one-half of this or two and a half cents a pound on all the cotton raised in each county start a manufactory and lay the foundation for one of the most prosperous countries in the world, and soon attract the eyes of all to our beautiful sunny land! And last, but not least, it is a charitable and Christian enterprise, by giving employment to the widows and orphans of our deceased soldiers, and all others in like condition, and enabling them to earn a comfortable living at home.

China Grove.

PLANT FOR NAME.

Editor of The Rural Carolinian:

I send, per mail, sample of the leaf, flower and fruit of a plant, the right name of which I am not certain that I know. The seeds that I send are matured, and you can raise plants from them if you wish. The fruit makes an excellent tart, (prepared as gooseberry tart,) and also a very nice preserve. I know of no other use for it. If any reader should desire it, he can obtain seed by addressing me; or if the plant is worth anything I will send you (the editor) all the seed I save for distribution.

B. W. J.

The plant is the ground cherry (*Physalis viscosa*) and is sometimes cultivated, but there is another species (*P. edulis*) sold by seedsmen under the name of Strawberry Tomato, which has a much finer flavor, and though the fruit is smaller, is to be preferred to this.—Ed.

RICE CUTTING MACHINES.

Editor of The Rural Carolinian:

Seeing in your July number an inquiry as to the "Rice Bird" Reaper, I would state my opinion as to its qualities: It will cut rice, but, like all self-rakers, has not the power to lay the rice evenly in grips, in consequence of the rice being so heavy, and green. I think the machine can be improved somewhat.

There has been a new machine tried here upon the plantation of Mr. Smith Barnwell; trial witnessed by Joseph Huger, Thos. Screven, Mr. Manigault, Mr. Smith Barnwell and others; and the machine can be made a perfect success by a few trifling alterations. It cuts a five foot swarth, (or four drills of rice;) cuts any height, from six to twenty-four inches, and lays the rice in swarth on top

of stubble, in a manner equal to the best of hand labor. It can be drawn by two good mules or horses and managed by one man accustomed to handling mules or horses. Eight acres of rice can be cut per day when the machine is worked, or an acre per hour if pushed to its fullest extent. THOS. J. MOLONY, Jr.
Savannah, Ga.

INQUIRIES AND ANSWERS.

W., Newton, Miss. We have not tried *Smith's Patent Well Fixture*, but from what we have learned concerning it, we think it a good thing. We publish an illustrated description of it in this number.

—— For information concerning *Onion Culture*, P. R. F. refers Dr. G. L. Glazernerd to page 716, in the August number of THE RURAL CAROLINIAN; and for more explicit directions, showing profits, etc., to page 49, February number of the *Southern Cultivator*.

—— M. H. W. and others desire to know what is the best *paint for house roofs*, and whether the Pecora Company's colored paints are reliable. Will some one who has the necessary experience answer?

—— Mrs. C. can transplant her *roses* with success any time during the winter, but the sooner it is done the better. Prune closely, strip off the leaves, and water well when planting.

—— Subscriber, outhwestern Georgia. Yes, the *mango* will succeed finely with you. Seed (the whole fruit is planted) should be secured this fall, and kept in sand in a cool place during the winter.

—— P. M., Florida, wishes to know how to harvest and secure a crop of *sugar cane*, and how to keep seed cane in the best condition.

P. R. F. requests *Sea Island planters* who experimented with *short cotton* this year, to give the result of their experience.

LITERARY AND HOME DEPARTMENT.

THE MURILLO DE LA MERCED.

CHAPTER III.

I am in Rome, and between what I have told and am about to tell, there is an interval of ten years. During that time, step by step, slowly at first, then rapidly, I had gone up the hill of public favor, and was now, for an artist, a rich man. Outwardly my fate appeared all prosperity and content; but my inner life was one of hopeless dreary pining, for no blood-boltered spectre of his victim ever haunted the slayer more persistently than all those years the form of the fair creature I had painted in her marvellous beauty—her impossible attainment haunted my imagination—my heart.

I had not, however, reposed all that time in quiescent indifference; but had set in motion, again and again, all the means I could devise and command to penetrate the mystery in which I had been involved; but none had proved effective—all had failed—not the film of a clue could be discovered. It was well for me that I had the irrepressible instinct for art and art-work. I think—I know it saved me. It was a shelter from scorching passion, a defence against deadly despair; a motive and a solace for which I was content to live on—without which I had been more than content to die.

A more than usually severe attack of my old nervous debility made at the end of the season of '32, a residence, for the ensuing winter, in a more genial climate, a necessity to my restoration. I spent some months in the south of France and at Nice; and in the spring of the following year, just before Lent, came on to Rome.

It was not the first, by several, of my visits to the Eternal City. Here, besides my never-ending delight in its great works of art, I had the pleasure of renewing old and congenial friendships. On all previous occasions I had come to Rome to work; now I was purposely idle, at least as far as brain or hand production went, for it was the only holiday I had ever given myself. The genial climates of France and Italy—the changes of scene—the repose from labor—the subdued excitement, without reaction, of contemplating the noble creations of art—the view of majestic, if ruined, edifices, or gorgeous religious ceremonies—varied by calm, almost melancholy, meditation in solemn churches, chapels, and the tranquil galleries of ancient palaces, rich not alone in the accumulated outpourings of genius, but with recollections, as well, of great men and greater events—were influences

that stirred to its depths the dead sea of sluggish grief, in which I had suffered all the germs of delight in my heart to lie sunken and buried; which aided my convalescence, and revived in my being capacities of happiness to which I had been insensible since the time of my strange adventure.

One of the alterative effects which the old morbid state had produced in my character was a shrinking and aversion from new acquaintances; above all, a dislike to be one in any promiscuous company. Lately I had so nearly succeeded in vanquishing both of these unreasonable feelings that I became a frequent visitor at the Greco;* and never refused or hesitated now to use the introductions I had brought, or such as were proffered to me by my resident brother artists and friends. It was another and new delight to me wandering among the studios, as well as through the churches and galleries. Although it was not very obvious to myself then I can well understand now, how great a change was, with unconscious rapidity, taking place in me. My mind was recovering elasticity enough to rebound against the tyranny of imagination, and often to assert the long-abandoned right of choosing her own subject of thought or fancy.

During a former visit to Rome, when once by chance at the Café Greco, I had become interested, at first through his appearance, and subsequently more deeply on obtaining a sketch of his character and history, in a Swiss, a painter, whom I saw there. He looked what he was, "a man weary with disaster, tugged with fortune;" one who at the beginning of his life had mistaken his vocation, and fallen into the fatal error of believing that inclination and aspiration were power and genius. Possessed in no small degree of intellect, perseverance, and many talents, he had not a spark of the divine fire which fuses these noble elements into forms that make their creator's name a living word upon the tongue of fame. When I first became acquainted with him he was old, and seemed like one who, having come forth out of the battle of life all scarred and worn, was resigned to dare the strife no more—to embrace content rather than wrestle with ambition—to play with cheerfulness instead of struggling to retain hope.

We had lately become close friends. I had got to love the man, and I think he liked me. One of the results of our friendship was an invitation to visit his studio in an old palazzo, which was a regular burrow of artists, in the Piazza del Popolo. There was no dificulty in finding his atelier; for above it, at the sides and beneath, were others occupied by men I knew, and the most part of whom I had visited. It was on the first morning after my return from an excursion among the Alban hills that I made my promised call. To my surprise, my knock elicited no reply from within; but instead at the door of the adjoining "shop" appeared its tenant, my friend Conway Charters.

"Hollo! you! How goes it?" he said, while shaking my hand in the British manner. "You've been up to Adrian's villa, they tell me. Glorious among the hills at this time of year, isn't it? Want Stapfer?"

"Yes; he has asked me to see his paintings."

"He's gone off hurry-skurry to Zurich—he comes from Zurich, you know. There's some news—bad or good, we can't make out which from his manner, poor fellow!—there's some news from his sister."

"Well, I hope then it's good. How are you?"

"Oh, I'm all right, thanks! I've got Stapfer's key here; if you like to go in and look at his lot, I'll come to you in half an hour—my model's time's up soon."

There is no law more absolute than the one which decrees that he who upon no business interrupts an artist engaged with his model, is guilty of impertinence; so, taking the key, I let myself into Stapfer's place. The history of his art-life might be read upon the walls at a glance. Abundant passages were written there, in his work, containing clear evidence of all the qualities but one which make a great artist; but as clearly to be read was the absence of that one—genius: his work was painted fire that warms not. Yet it was here, among his lifeless transcripts from breathing forms, that I found a work which stirred emotion in me to profounder depths than all the genius of past and present concentred in one force could have done. Where the light fell fairest, in the middle of a compartment, hidden by the folds of a dingy green curtain, hung a picture by itself. Guessing from these circumstances that Stapfer regarded this as his *chef-d'œuvre*, with the desperate hope of finding something which, when I again saw him, I might conscientiously praise, I drew aside the cloth. My God! it was the Princess. Is time an entity? if so, what is memory? All I know is, that before that clay-colored, expressionless effigy of my idea, my heart leaped back across the gulf in time of ten years, and throbbed with the same feeling it throbbed with then, the last time I stood in its living presence.

Rapt as a seer in his ecstacy, I had lost all sense of time present or things surrounding, when Charters's entrance recalled me to the perception of both.

"Ah," he said, "you couldn't please poor Stapffy more than by taking notice of that

*The Cafe del Greco—the tavern in Rome where artists "most do congregate."

thing of his. He is either precious proud of his work, or else he was spoons upon his model. I rather think the last; for queer as his painting is, you can make her out to be a splendid creature."

"You don't know, then, who she is?" I asked, holding my breath till he replied.

"No; he did it in Naples, and calls it 'La Principessa.'"

"In Naples! In Naples do you say? Do you know how long ago?

"I think it has got a date somewhere—oh, here, 1823."

The same year that I painted her!

"And you really think he was in love with her?"

"Why, I only suppose so, because he won't sell the picture at any price; and we can always get a rise out of him by ever so little chaff about 'De Brincess,' as he Englishes it: a great shame, though—he's such a good old fellow!"

Conway Charters could tell me nothing more, except that letters *poste restante*, Zurich, would be sure to reach him.

On leaving the studio, I moved about all day like one in a troubled dream, with some formless purpose before him, some end to be achieved, for which he is doomed to struggle forward, though with conscious disappointment of effort, and utter powerlessness in himself. It was not till after I had dined—under any circumstances one always dines, if he can get a dinner—that, aided by a little wine and a big smoke, the flood of my turmoiled thought subsided within the banks of reason; the current, however, rushed but one way. I would—I must—discover this mysterious Princess; and, but subordinate to that purpose, the other mysteries of the dead head, and why its picture and hers had been painted under such circumstances of determined secrecy. In my eagerness, had it been possible to start at the instant, I should have rushed off in person to Zurich to question Stapfer; but a little reflection showed me that I might frustrate their object by making my inquiries unduly important, besides betraying feelings which I shrunk from exposing to any one else. I therefore wrote, but in very guarded language; and, taking the hint from what Charters had said, laid the trouble which I was giving him upon the interest with which his picture had inspired me.

The letter despatched, I was again, perforce, left to all the nervous irritability of suspense. Occupy myself as I would, do what I could, while waiting a reply, my imagination never left to be ablaze, trying to light up the obscurity into which the feeble clue, which I had at last laid hold on, seemed to lead, and to suggest romantic circumstances enough to form the groundworks of a whole circulating library. At last Stapfer's answer came. What infinite pains, in his good nature, he must have taken to translate—evidently by the continuous help of a dictionary—what he had to say, out of his native German into English—English execrably worse than that he usually spoke. I need only transcribe those passages that referred to the subject on which I had addressed him, and which determined my next proceedings. I give them literally:—

"I have myself a delight out of it made 'La Principessa' to paint. I can it me never over the heart bring it to bargain. It do me much sorrow if you a particular wish cherish the picture to possess. I have it in Naple paint. La Principessa is there establish. She live to the Lavinaio nel Quartiere Mercato. Ach! It is long ago since I she see have."

This information was satisfactory only on the point of where she lived when he painted her picture. Why had he not mentioned her name? there might be, probably were, dozens of princesses in Naples. Suppose she had removed since then—how was I to find this particular princess with no other note of her identity than that she was a princess? "Ah!" sighed I, as poor Stapfer had done, "this princess is distinguished from all other princesses by such beauty! I will try it, however; anything—above all, action—is better a million fold than such heartaching restless nights and suspense-fretted days."

Suddenly an unthought-of but mighty obstacle rose up between me and my purpose. Beyond the ordinary phrases to be picked out of a vocabulary, I knew no Italian. I saw at once that I must decide between making a confidant of a strange cicerone, or of a friend. In twenty minutes I was at Charters's studio.

"You are strong in Italian, are not you?" I asked.

"Spare my blushes; yes," he replied.

"Do you think they would puzzle you at Naples?"

"What! in talking?—no. In doing they might, confoundedly."

"You've been there?"

"Twice."

"Should you like to go again?"

"I mean to."

"When?"

"When the gods are conformable, and sell a picture or two."

In ten minutes' additional conversation I prevailed on Conway to become my companion, and succeeded in overbearing all excuses for delay, even that of getting his linen home from the *lavandaia;* and, as a further result, the next morning, at a few minutes after seven, seated opposite each other in a *vetturino*, we were jogging along the Appian Way towards the Pontine Marshes on the old Terracina road.

(*To be continued.*)

WOMAN'S WORK.

Darning little stockings
For restless little feet,
Washing little faces
To keep them clean and sweet.
Hearing Bible lessons,
Teaching Catechism,
Praying for salvation,
From heresy and schism—
Woman's work!

Letting fall her own tears
Where only God can see,
Wiping off another's
With tender sympathy;
Learning by experience,
Teaching by example,
Yearning for the gateway,
Golden, pearly, ample—
Woman's work!

Lastly cometh silence
A day of deep repose—
Her locks smoothly braided,
Upon her breast a rose;
Lashes resting gently
Upon the marble cheek,
A look of blessed peace
Upon her forehead meek.

[MRS. TOWNSEND.

OUR PATTY-BREADS.

A duty to society is made known to me, and I hasten to discharge it. I will sound the praises of our patty-breads, for it is a pity that any American citizen should remain ignorant of their merits.

Taste of one. It is warm from the oven—a little oval cake, light, soft, sweet, and wholesome. Guess the ingredients. It is not made light with yeast; there is no soda, ammonia, sour milk, buttermilk, eggs or shortening in it—nothing but flour and water. I make it myself.

Half an hour ago I said: "The oven is hot now, and I will bake another dozen of patty-breads for tea." So I stirred up a batter of unbolted wheat flour and cold water, and filled the dozen small iron cups of my nest of patty irons, rounding them up with the rather thick batter. I put them in the oven immediately, and twenty minutes afterward removed them beautifully done. They had risen till they were double their original thickness, and were just nicely browned on the crust.

Professor Youmans will have to revise his excellent treatise on household science. He will be glad to learn that bread can be both light and soft, made simply of flour (either fine or unbolted) mixed with water. No fermentation, no kneading, no rolling out, no shortening, no soda. Let housekeepers rejoice.

Of course, single patty-pans will make as good bread as those that come in nests; but you cannot use single ones, and consistently pray, "Lead us not into temptation," so trying to the temper of the sunniest Christian is the task of turning these little hot cakes around and moving them from the hot oven. The iron set of a dozen cups costs a dollar; but how soon is their cost saved by the economy of eggs, butter, and soda, that follows their introduction?

No tedious recipe for johnny-cake—with cream, eggs, sugar, butter, sour milk, soda—ever made corn-cakes that tasted sweeter to Mr. Rochester and me, than those made in these irons with simple meal and water. Scald the meal with boiling water, (this brings out the sweetness of the meal wonderfully,) stir the batter pretty thick, not minding if the cakes are rough upon the top—the shades of golden brown upon the upper crust will have all the more variety and beauty because of the unevenness.

You can make white or fine flour biscuit in the same way as the Graham cakes, stirring the batter very thick. Unbolted meal requires more water, as it swells more in baking.

It is pleasant to experiment, and see how many varieties of good bread may be made in this simple way. We have tried buckwheat and fine wheat flour, half and half; corn meal and fine flour prepared in the same manner—all with good success. Sometimes we use salt, and sometimes we omit it. These cakes are said to be better mixed with milk.

The oven must always be hot, or they will be heavy; and if the batter is too thin they will be hollow. When properly mixed and properly baked, they will certainly be light and good. So, if you fail once, try again.

Patty-pans, or irons, are not essential for making unleavened cakes; but they are more convenient, and their use makes success more certain than when the mass is rolled out like biscuits, or dropped upon a baking tin with a spoon.—*Ohio Farmer.*

A SIMPLE EARTH CLOSET.

The idea seems to prevail that the Earth Closet is necessarily a complicated and costly luxury. Nothing is further from the truth. The patent commode, it is true, is somewhat expensive, and not entirely simple in its structure. It is an excellent thing for those who can afford it; but those who cannot do so, need not on that account deny themselves the advantages afforded by the principle involved. It can be made available, both in city and country, and in several different ways, at almost no expense at all. This is

one way, and a very good one, as we know by experience:

Procure one or more camp kettles of sheet iron, which ought not to cost over a dollar each, and paint the inside with coal tar, thickened with sand, or with any kind of paint if the tar be not at hand. Construct your seat wherever you want it, with hinges so that it can be readily raised; or, better, let the seat be a movable box of the proper height and size. When the seat is down, it should touch the rim of the kettle which is placed under the hole. Place at the right hand of the seat another box containing dry earth or coal ash, with a scoop or shovel with which to apply it, and your Earth Closet is ready for use. About once a week, perhaps, it will be necessary to lift the seat, take out the kettle by its bail and deposit its contents on the manure heap. If properly managed not the slightest smell will be emitted.

Sand will not answer well for the Earth Closet, but clay or any fertile soil will do. It must, however, be dry and fine.

In place of the sheet iron kettle, recommended as being most durable, you may use a tin kettle or even a wooden bucket painted as before directed, or occasionally whitewashed on the inside. Is anybody too poor to have an Earth Closet?

WHAT IS GOOD MANNERS?

Good manners consist in the display of benevolence in little things. For instance, if you would honor an aged person, or be thoughtful of an invalid, you think whether your chair may not be more comfortable than theirs. The same spirit that prompts one to give the easy chair, will suggest a hundred similar acts of thoughtfulness, and the highest politeness is nothing more than thought for the convenience and comfort of others expressed in a graceful way. In mixed assembles a polite nature will prompt you to look specially after the poor, the timid, and the strangers. Don't think how you can have a good time yourself, but see that girl over there, whose silk is dyed, and whose hands are red. Talk with her, and make things easy in that part of the room.

Sammy Willcox is the handsomest young man that walks the village pavement; he will need no looking after; there are half a dozen girls who have curled their beau-catchers to entangle his bright eyes if they can. But you will find over by the door some honest fellow whose cravat is badly tied, whose hair is not parted evenly, and whose coat collar has hay-seed on it. Show him pictures and talk with him; for ten to one his is the stronger arm and truer heart.

As to conversation the same rule holds. Forget yourself. You must know something of the person you sit beside. Upon that something as a basis spin out the web of your talk, always remembering that he is always and everywhere interesting to himself if to nobody else. Get him to tell his story, to lift a corner of the curtain that veils his inner life. That will unseal any fountain. No talkers are more agreeable than those who draw out. A pretty manner and a sweet voice will make almost anything agreeable; but if our young lady aspires to benefit as well as to charm, she can only do so by thinking clearly and feeling an unaffected kindness.

DYSPEPSIA.

A correspondent sends us the following extract, saying that he knows from experience that the advice given in it is valuable:

If a man wishes to get rid of dyspepsia, he must give his stomach and brain less to do. It will be of no service to him to follow any particular regimen—to live on chaff bread or any such stuff—to weigh his food, etc., so long as the brain is in a constant state of excitement. Let that have proper rest, and the stomach will perform its functions. But if he pass fourteen or fifteen hours a day in his office or counting-room, and take no exercise, his stomach will inevitably become paralyzed, and if he puts nothing into it but a cracker a day, it will not digest it. In many cases it is the brain that is the primary cause. Give that delicate organ some rest. Leave your business behind you when you go to your home. Do not sit down to your dinner with your brows knit, and your mind absorbed in casting up interest accounts. Never abridge the usual hours of sleep. Take more or less exercise in the open air every day. Allow yourself some innocent recreation. Eat moderately, slowly, and of just what you please—provided it be not the shovel and tongs. If any particular dish disagrees with you, however, never touch it or look at it. Do not imagine that you must live on rye bread nor oatmeal porridge; a reasonable quantity of nutritious food is essential to the mind as well as the body. Above all, banish all thoughts of the subject. If you have any treatises on dyspepsia, domestic medicines, etc., put them directly into the fire. If you are constantly talking and thinking about dyspepsia, you will surely have it. Endeavor to forget that you have a stomach. Keep a clear conscience; live temperately, regularly, cleanly; be industrious, too, but be temperate.

INFLUENCE OF SOUND UPON RAIN.

A French *savant* maintains that it is in our power to produce rain at any time when the wind is in the right direction and there are clouds of vapor in the sky. The proper direction of the wind must be determined for each place by experiment, and the condition of the sky must be studied before attempting to hasten a rain fall by any particular sounds, such as the ringing of bells or the firing of cannon. During the siege of Sebastopol, as soon as the cannonading commenced the sky was overcast, and a fine rain began to fall, which was sometimes followed by violent storms and whirlwinds.

As a consequence of the atmospheric changes, the mercurial column in the barometer commenced to vibrate, and it was possible to represent on a chart the exact state of the siege by giving the height of the barometer at all hours of the day. Whenever there was a truce of a few hours for the burial of the dead, the changes in the height of the mercury at once indicated it.

It has been found that the explosions of powder magazines and the heavy blasts of mines, as well as the violent ringing of bells, have brought on a sudden fall of rain. In some instances the striking of a clock in the tower of a church indicated the exact hour of the commencement of the storm. Whether this was an incidental coincidence or attributable to cause and effect, it is difficult to say.

It was found by the same *savant* that of one hundred and thirty-three rain falls, seventy-six commenced at the sounding of the hour by the church clock; forty-two at the stroke of the half hour, eight at the three quarters, and seven at the quarter.

In large cities the varieties of sounds produce opposite effects, and may neutralize each other, and it is difficult to study the phenomena; but in small towns, if we notice the commencement of the rain, it is said that it will coincide with the stroke of the clock.

The explanation given is, that the vapor of water is formed of myriads of globules similar to soap bubbles, which burst when the percussion of the air is excessive, and thus run to water and produce rain. When the sky is overcast with such vapor, if we fire a cannon the equilibrium is destroyed, the globules burst, and the rain falls. If, however, the sky is clear, the discharge of cannon cannot cause rain, as there is none in the sky to be made to fall—but the vibrations in the air may affect some distant place where the clouds are already charged with vapor.

During the Crimean war, in Italy, and in Bohemia in 1866, it was observed that a rain storm attended nearly every battle. At Solferino there was a heavy storm of hail and rain between 4 and 5 P. M., which obliged the French to cease fighting, and thus probably saved the Austrian army.

M. L. Maouc, who has studied this subject more than any other writer, recommends the systematic establishment of meteorological stations in communication with each other, to be provided with cannon of suitable calibre, and, when the wind is in the right direction, to hasten a rain-fall, or to drive the clouds to an opposite direction if a continuance of dry weather be desired.

He firmly believes that it is in our power to control the elements sufficiently to do all this. It is easy to criticise and find objection to the theory, but the best way would be to try the experiment. We read that in the present unhappy war in Europe, the troops have suffered greatly from rain; and as the cannonading was kept up for nearly a week, there may be some connection between it and the condensation of moisture. The fact that great battles are often attended by rain has been observed since remote antiquity, but no one has attempted to draw any conclusion from this circumstance, or to make any practical application of it. We also know that guides in Switzerland interdict all talking, singing, or even whistling when a party is ascending a mountain, as any sudden vibration in the air produced by the least sound is often sufficient to start an avalanche that could sweep away the whole company in a moment.

IRRIGATION IN ANCIENT EGYPT.

In the first historical reign—the reign of Menes—there was a little dabbling in waterworks, but merely this, that the whole stream of the Nile, or one of its main branches, was diverted from its course to favor the planting of the City of Memphis. The engineer who undertook the job—and tradition credits the monarch himself with the execution—must have possessed the soul of Mrs. Partington, with something more than that lady's scientific acquirements. Menes took accurately the measure of the power which he resolved to oppose, and constructed a dyke "whose lofty mounds and strong embankments," says Wilkinson, "turned the water to the eastward, and effectually confined the river to its new bed." The dyke was doubtless shown to Abraham, in whose day the diversion of the river was as old a story as the account of Joan of Arc or Jack Cade is to us. This is taking the very mildest calculation of the antiquity of Menes. And in the reign of Mœris, farther on, was formed an artificial lake, measuring, according to Herodotus, four hundred and fifty miles in circumference, and three hundred feet in depth. This huge lake was fed by the Nile through artificial channels; it received and

stored a portion of the annual overflow, and when that subsided, regurgitated upon the river by all the channels, prolonging the times of refreshing, and extending the fertilizing influence to land that, without the aid of art, would be absolutely barren, and no doubt was barren before the days of Mœris. Herodotus, and those who exactly followed him, were wrong, it is now thought, in supposing that this immense lake was wholly a work of art. There was probably a natural basin to suggest the scheme, but this was greatly increased; and all the feeding streams, the arteries and veins of the system, were undoubtedly artificial. These last had their floodgates, dams and locks, and were managed with the greatest skill. The retention of the waters seems to be all that is wanted to make the wilderness blossom; and yet for centuries and centuries younger Egyptians, although they had been shown the way, were unequal to the pursuit of such mighty designs, and in that most essential science were as dead men by comparison with the subjects of Menes and Mœris. In citing these two great works as instances, it is intended to show how generally the power of controlling streams and floods was possessed of old in the Delta and in Middle Egypt, and how thoroughly the value of it was understood by those primitive men. If he who has made one stalk of corn to grow where nothing grew before, is a benefactor of his kind, where, in the catalogue of philanthropists, shall we place old Mœris, to whom, under Providence, it was owing that once dry Egypt had corn enough and to spare when Syria and Arabia fainted from lack of sustenance? There can be little doubt that Modern Egypt, now that her soul is returning to her, will ere long address herself to the reclamation of her soil. At first it is perhaps a necessity that she labors to attract the wealth of the stranger; but, her treasury once replenished, she will surely search for and find the riches that may be drawn from her own bosom.

Glycerine and its Uses.—Comparatively but a few years have elapsed since glycerine was thrown away as a waste product from soap and stearine candle works. Now it is one of the most useful products. Tubs and pails saturated with it will neither shrink nor dry up. Leather soaked in it keeps moist and pliable. It is used for extracting the perfume of flowers, to preserve animal substances from decay, and hence is valuable for preserving purposes. It is employed in pharmacy, dyeing, brewing, liquor making, wine keeping, and a vast variety of other purposes. With nitric acid it forms nitro-glycerine, one of the most powerful explosives known.

RECIPES.

Remedies for Poison by Ivy.—1. Olive oil is said to be a sure cure for the poison of the Poison Ivy or Poison Oak, (*Rhus toxicodendron.*) In severe cases it is to be taken internally as well as applied externally. Dose, two table spoonfuls three times a day, keeping the affected parts well oiled all the time. Anointing the exposed parts with the oil will prevent poisoning.

2. Take a handful of quick lime, dissolve in water, let it stand half-hour, then paint the poisoned parts with it. Three or four applications never fail to cure the most aggravated cases—at least, so says a correspondent of the *Country Gentleman.*

Rice Griddle Cake.—Boil a cupful of rice in milk till quite soft; while hot stir in a little corn meal; when cold, add two or three eggs and a little salt and bake in small thin cakes on a griddle.

How to Save Your Shoe Soles.—The secret consists merely in melting together tallow and common resin, in the proportion of two parts of the former to one of the latter, and applying the preparation, hot to the soles of the boots or shoes—as much of it as the leather will absorb. One farmer declares that this little receipt, alone, has been worth more than five years' subscription to the newspapers publishing it.

Rock Cream.—This will be found a very ornamental as well as a delicious dish for a supper table. Boil a tea cupful of the best rice till quite soft in new milk, sweeten it with powdered loaf sugar, and pile it upon a dish. Lay on it in different places square lumps of either currant jelly, or preserved fruit of any kind; beat up the whites of five eggs to a stiff froth, with a little powdered sugar, and flavor with either orange-flower water or vanilla. Add to this, when beaten very stiff, about a table spoonful of rich cream and drop it over the rice, giving it the form of a rock of snow.

Pea Soup.—Steep dry split peas (garden peas) until they fall to pieces, (four or five hours or more,) then run through a colander, return to the fire with water, and thicken to the taste with flour or wheat meal. Most people prefer it rather thick. One-half pint of peas is enough for two quarts of soup.

——The best receipts for *cooking oysters*, in all known ways, are wanted for this department. Will not our lady readers help us in this and other domestic matters?

PUBLISHERS' DEPARTMENT.

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	1 Mo.	2 Mos.	3 Mos.	6 Mos.	1 Year.	SPECIAL.
1 page.....	$25	$45	$60	$100	$180	Outside back cover
¾ page.....	20	37	50	80	140	double rates. Inside
1 column	15	28	40	60	100	back cover, 50 per
¾ column	12	22	30	50	90	cent. added to rates.
½ column	10	18	25	40	75	No advertisements
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Moneys must be sent by Draft, Postoffice Order, Registered Letter, or Express, at our risk, but at the sender's expense.

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We will send the receipts for all renewals of subscriptions in the *number* of the magazine following the date of the reception of the remittance by us. This is allowed by the Postoffice Department, and will save us considerable time and money. It is the usual custom with magazines

PREMIUMS.

We will issue, on the first of January, a list of premiums for subscriptions to THE RURAL CAROLINIAN—which list will be furnished to parties writing for the same before that date.

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And D. WYATT AIKEN.

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WALKER, EVANS & COGSWELL,
Charleston, S. C.

FARM AND GARDEN CALENDAR FOR DECEMBER.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance north or south of this place must make necessary allowances for difference in the seasons.

AGRICULTURAL OPERATIONS.

Finishing up the work of the year is now in order in every branch of farming; also settling all accounts or preparing to do so, that the new year's business may be commenced aright.

——*Fences* should be repaired and new ones built as occasion requires. Some of the heaviest losses and worst annoyances that the farmer meets, often result from inadequate fences, and when the time comes that other work will press, it is very difficult to give them the attention they require. We must see to it now.

—— Cattle *exist* in our fine climate with little or no attention during the winter, but it does not pay in the end to let them thus take care of themselves. Let all your *stock* be well fed and sheltered, if you wish them to come out in good condition next spring.

—— *Manure* is one of the essentials of good farming, and now is the time to make, collect and prepare it. See articles on "Making and Saving Manure," on "Fertilizers," etc., in various numbers of THE RURAL CAROLINIAN.

—— *Grub out roots*, extract stumps, burn brush and inaugurate a general clearing up about the farm, preparatory to the commencement of the new year.

—— Now is the time to organize *Farmers' Clubs*, to discuss agricultural topics. Their organization should be very simple, and their meetings as little fettered by parliamentary forms as possible. Don't make too many by-laws and rules, but get together to talk in a free off-hand way about farming. Read, also, such books as you can get on the various subjects connected with your business, and look over the back numbers of your agricultural magazines.

GARDEN WORK.

In this latitude and southward, *peas* for the main crop may now be put in. The ground should be rich, but if so from previous manuring, it is better than if made so now by the application of fresh manure, which gives a tendency to produce a disproportionate growth of vines. To secure a succession, plant several varieties of different habits of growth, for instance: McLean's Little Gem or Tom Thumb for the earliest; Extra Early, or Dan O'Rourk, and Bishop's Dwarf, Long Pod, next; and for later supplies, Eugenia, Brown's Marrowfat, Champion of England, and Large White Marrow. See directions for planting in November number. Even the dwarf sorts do best with sticks.

—— *Cabbage Plants* from your September or October sowings, if you are so fortunate as to have them, may be put out. If necessary, give them protection by throwing your ground into ridges, and planting them on the south side of each ridge. You can cover them slightly with straw in severe weather. They should produce fine heads in April. Cabbage seed, if heretofore neglected, may still be sown. Try Early Ulm Savoy, Little Pixie, and Dwarf Flat Dutch.

—— *Mazagan or Windsor Beans* may be planted as directed last month.

—— *Onions* are still in order for planting any time during this month and the next.

—— *Spinach, Radishes and Lettuce* should be planted for a succession. Flanders spinach is best, but Round Leaved is good.

—— *Irish potatoes* may be planted about the end of the month, or delayed till January. See article on Potato Culture, Vol. I., p. 163, December, 1869.

—— *Grape vines and fruit trees* should be pruned and new ones planted as needed. The ground should be deeply ploughed (and subsoiled if practicable,) and the holes made broad but not deep.

—— In the *flower garden* there is not much to be done this month, except pruning and transplanting shrubs and vines, and protecting plants that are liable to be injured by frost.

The Angora (Cashmere) Goat.

THE

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What is the Duty of the Hour?*

Mr. President, Ladies and Gentlemen of the Barnwell Agricultural Society:

Courtesy requires that I return you the time-honored expression of gratitude for the honor you have done me in selecting me as your orator on this occasion; but justice to myself demands that I should declare, however complimentary the selection or agreeable the compliance, that the task is accepted more as a duty than a pleasure.

Convinced that duty should never be shirked, I know of no more appropriate theme to discuss on the present occasion, than the simply inquiry: WHAT IS THE DUTY OF THE HOUR?

Simple inquiry! but pregnant with suggestions! Who that appreciates it can answer it satisfactorily? The moralist may do so by inculcating the dogma: "Keep thyself unspotted from the world." The politician may solve the question by grasping after the spoils of office. The covetous may practically illustrate their reply by striving assiduously to add to their accumulated wealth. But it is to none of these I would address the inquiry. It is of you, fellow-citizens, as tillers of the soil, as mechanics and agriculturists, I would inquire: What is *your* duty to-day, surrounded as you are by trials and troubles, that your fathers knew not of, and which you would be loath to transmit as a legacy to your children?

I answer for you; it is your duty to honor, to dignify, and to perfect your

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*An Address before the Barnwell County Agricultural and Mechanical Society, at the Fair Grounds, Barnwell C. H., S. C., November 17th, 1870, by Colonel D. Wyatt Aiken. Published in accordance with the following resolution:

Resolved, That the thanks of this Society are due and hereby tendered to Col. D. Wyatt Aiken, for the chaste and instructive Address delivered to us this day. That our Secretary be instructed to forward this resolution to Col. Aiken, and request a copy of the Address for publication in THE RURAL CAROLINIAN.

W. H. DUNCAN,
Sec. and Treas. B. A. and M. S.

profession; that profession which is indispensable to national prosperity, and without which mankind would be savages; that profession, which employing seven-eighths of the population of the civilized world, is the most universal as well as the most ancient of all the arts. Yes, ancient Rome venerated the plough, and none of her illustrious sons were more honored than her successful husbandmen. Egypt, too, grateful for the blessings of agriculture, worshipped the ox for his services as a laborer.

But, fellow-citizens, what report have we to give of our stewardship in this most ennobling of all vocations? Let us for a moment review the history of agricultural practice in our State.

Anterior to the war, South Carolina planters almost universally adopted a policy that indicated they were as cosmopolitan as the Arabs of the desert. Land being abundant, population sparse, and labor a chattel, they pursued that exhaustive system of culture, which, though immediately remunerative, ultimately caused the abandonment of home, and induced the seeking a place to sojourn in the wilds of the West. The organ of locality had no phrenological development with them. They felled the virgin forests, and sterilized the soil by shallow culture, that a speedy return might be realized upon the investment. The income was again invested in lands or negroes that more forests might be cleared to make more money to buy more land and negroes; and so on went the rotation, a wheel within a wheel, which at every revolution impoverished the State, and entailed upon posterity an inheritance valueless and burthensome.

Fellow-citizens, we are that posterity. It is we who have fallen heir to this crushing responsibility. It is we who have this intricate problem to solve of bringing quiet, and order, and contentment, and prosperity out of industrial chaos, confusion, discontent, and poverty. Are we competent to the task? Shall we quit ourselves like men determined to succeed? Or, sinking our energies in the slough of despond, shall we have posterity to point the finger of scorn at our generation and say, they have bequeathed us an ancestral inheritance of trial and trouble?

No, no, we must never despair; but implicitly relying upon Him who rules the affairs of men, and who sends the rains upon the just and the unjust, we must fully appreciate the practical duty of rejuvenating our impoverished State by combining science with art in developing her industrial resources, and in perfecting that vocation which alone will enable us to drive want from our doors, and scatter peace and plenty over the land. True, the task seems to be an herculean one, and obstacles almost insurmountable obstruct our path. But are we not, year by year, the culpable architects of these very obstructions?

As fellows of the same brotherhood, we have but little community of feeling, less unity of thought, and no concert of action—and without these we can accomplish nothing. Embarking in a profession where energy, industry, judgment, thought and practical sense are perhaps more necessary than in any of the learned professions, we ignore the want of these very virtues in that inferior race with whom we have to deal, and admit into agricultural

copartnerships those who, because they can hold the plough, or use the maul, claim to be representatives in the firm. Their presumption secured our submission; our submission is their ruin; their ruin is our failure; and such has been the result of all agricultural enterprises since the inception of the new order of plantation economy in our State. And such, my fellow-citizens, will continue to be the case until labor is bought and sold as any other commodity.

Labor is all important in developing our industrial resources, but it must be intelligibly directed to become efficient and powerful. Mere brute force can avail nothing. Science may unfold the treasures of nature, but art can never appropriate them if labor be scarce or inefficient. Our labor is not scarce; and why is it inefficient? Because not controlled—and not controlled because not purchased.

The security of every nation is often dependent upon the character and quality of its labor; and that portion of our population upon whom we depend for labor never have, and never will, improve the character of themselves or their labor, unless guided by superior intelligence. Were we true to ourselves we could, by force of example, by social influence, and by a proper exercise of patience, instil into our laborers good habits—and, perhaps, good morals—and inspire in them that respect for themselves which we demand of them for us, and thereby make them become the most efficient laborers in the world. Intellectually improved they would comprehend their inability to direct the agriculture of the country, and submit to the control of those whose educated intelligence appreciating the strides of agricultural science would receive and apply its invaluable developments. Under the existing system, if system it be, where capital is powerless and labor demoralized, how can we advance a single step towards perfecting our profession?

Controlling labor, we should next educate ourselves to appreciate science so that when agricultural chemisty speaks to us of the analysis of soils and the food of plants we should be prepared to receive the information intelligibly. It is not expected that each of us should be competent to analyze; nor is it absolutely necessary to know analytically the component parts of our exhausted soils before we take steps to recuperate them. Indeed, there are certain conditions of soil whose analysis, if solely relied upon, would lead us greatly astray; for instance: chemistry assures us the air is composed of nitrogen, oxygen and carbon; and that water is composed of oxygen and hydrogen; and that these four elements constitute nine-tenths of the substance of plants. But practically we know that the commissariat of the world would soon be emptied to starvation if our subsistence supplies were dependent upon those plants which flourish simply in air and water. The remaining one-tenth, which comes from the earth, is not unfrequently absent from our barren soils; and, even if it were present in the soil, it does not follow, as a practical deduction, that that soil is necessarily fertile, for this very small proportion may be proven, by analysis, to be insoluble, and therefore useless. Just here chemistry again comes to our assistance, and reveals the process by which this insoluble matter may be made soluble, and thus become

wholesome and nutritious plant food; thereby vindicating herself against the slanderous accusations of those who loudly decry that much abused system called Book Farming.

It is from the practical study of agricultural chemistry that we learn the peculiar diet of every plant, whether we desire to produce weed, as in the growth of the sugar cane, or fruit, as in the culture of cotton. Therefore, comprehending the suggestions of chemistry, and combining them with agricultural practice, the intelligent planter is enabled to retain, and possibly increase the productive capacity of his lands.

But, fellow-citizens, perfect control of the most efficient labor, and a thorough knowledge of agricultural chemistry, do not guarantee to the planter remunerative crops and increasing fertility of soil. For, though the theories of the laboratory are successfuly practical, when applied scientifically, and though much depends upon the intelligible guidance of properly expended industry and energy, many destructive agencies are constantly at work, which test effectually the patience, the perseverance and the practical ability of the planter.

On the plantations of our undulating middle and upper country, one heavy rain will often in a single afternoon carry away more of the soluble matter of the soil, and indeed of the soil itself, than can be restored in a twelvemonth by the most energetic and industrious farmer; or most beautiful prospects of an abundant harvest may be entirely blasted by the scorching effects of our summer's sun. These casualties are the afflictions of Providence, and must be quietly endured.

But the planters themselves are often the culpable agents of their own misfortunes. Lands are cultivated too wet; furrows are scratched up and down hill; no attention is paid to horizontalization; drainage is ignored, and irrigation unheard of. Where throughout our entire State will the scarified surface of the earth impress us with the application of science to farming? Scarcely a hillside but that is slashed into gullies, and denuded of its virgin soil, exposing the red subsoil like a great boil on mother earth's countenance. And even here, in this beautiful level country of yours, the extensive and unproductive shallow ponds attest the prevailing ignorance of agricultural chemistry, while the melancholy pine seems mournfully to hum a dirge over the failure of man to practice the lessons of science.

But, Mr. President, it is not only of scientific agriculture we are grossly ignorant, we know nothing of the history of experimental agriculture, and without a record of agricultural statistics, we have not even a tradition traceable to the practices of antiquity. Each of us labors day after day, plodding along in our old beaten track, and if perchance we discover or invent some new principle of agricultural practice, it simply corroborates the maxim of the wise man—there's nothing new under the sun.

Deep ploughing and subsoiling before planting is one of the progressive ideas of the day. Think you this was not practiced long ago? Was Elisha merely skimming over the surface when Elijah found him ploughing with

twelve yoke of oxen? The Israelites were familiar with "turning shares" and "coulters." And does not this mean deep ploughing? The ancient Romans fallowed their lands and sowed seed in the drill. An ancient writer commends the planter who pastures his small grain to prevent its too rapid growth and early maturity. And we are this day less acquainted with irrigation than were the agriculturists two thousand years ago, for Virgil advises the farmers of his day to carry the waters of the mountain streams by artificial channels from the brows of the hill to the parched and suffering plants of the valley. Who amongst you, fellow-citizens, so beautifully utilizes the water power under his control? And who that has a running stream upon his plantation could not deserve the commendation of this ancient poet? The scouring power of running water has washed out deep channels for most of our streams, and were any of these tapped by horizontal drains at the upper sides of our plantations, we might greatly mitigate the disastrous effects of our parching summers. This, however, is seldom if ever done, because we are ignorant of the principles of irrigation.

Another popularized idea of the present day is, that we plant too much land. We skim over too great an area, and seldom, if ever, test scientifically the productive capacity of our soil. By curtailing this area and increasing the yield, the productive result would be the same. How beautifully is this idea illustrated by an ancient fable: "A vine-dresser had two daughters and a vineyard; when the elder daughter was married he gave her a third of his vineyard as her patrimony; subsequently he had the same quantity of fruit as formerly. When the other daughter was married he gave her half the remainder of the vineyard; and yet in a few years the income from the remaining one-third of the vineyard was as great as it had been when the two daughters were single." Circumstanced as we are, burthened with too much land, surrounded by political, financial and social demoralization, this ancient apologue is full of wholesome instruction. Let us learn from it a practical lesson. Throw aside two-thirds of your planting area, and devote as much labor to the remaining one-third, and your income will not be diminished. Concentrate your talents, your power, your labor, and more bountiful harvests will be the result.

I would ask, however, Mr. President, is it all of the planter's duty to enrich his farm, and thereby enrich his pocket? In our progress through life in the pursuit of happiness, or more appropriately in our efforts to escape unhappiness, shall we only live to become utilitarians? In no age of the world has practical success more entitled man to admiration, and almost veneration, than the present. In this noisy nineteenth century the developments of science have emboldened man, with his superior intelligence, to utilize the elements, and almost the attributes of Deity.

By inspiration, Joshua commanded, and the sun stood still in the midst of the heavens, thus annihilating time. Equally so has modern science accomplished this end by piercing the mighty ocean with its electric wires, and flashing across, beneath its waters, from continent to continent, intelligible

messages hours before the arrival of the exact second of the despatch. No enterprise seems to be too gigantic for the present age. Mighty rivers are spanned with magnificent bridges, over which tons of freight are hurled with the speed of the wind, without jostling their nicely proportioned arches. The majestic steamship, constructed of the heaviest metals, is, by the hand of science, made to skip over the waters with the buoyancy of the water-fowl. Nor has the science of agriculture lagged behind in these wonderful developments. Here in your own county was conceived the idea of applying the power of steam to the plough, which has made the soils laugh with the fattest of luxuriant crops. These strides of progressive ingenuity, assimilating man more closely to his Maker, should invite us to aspire to something beyond mere utilitarianism. Our intellects should be improved, our tastes cultivated, and our feelings refined, to enable us to appreciate and enjoy them.

But what is the effect of all this progress upon our industrial classes? All over our State, and throughout the South, this portion of our population is inattentive to culture of any kind, and destitute of those ideas of refinement which makes home so happy, and so well adorn the family circle. Laudable exceptions to this sweeping charge are abundant, for nowhere can characters be found more to be admired for private worth and social virtue, than in our Southern States. The liberal and unbounded hospitality of the Southern planter was once so universal that it ceased to be a characteristic virtue. Warm hearts, responsive to the influence of our summer's sun; solid worth, inherited from noble parentage; commendable pride, instilled by example; and general affluence, earned by honest toil, coupled with a most perfect system of plantation economy, all combined to make the Southern planter the most honorable and high-minded of men.

Such characters, however, were but a small minority of the Southern people. The vast majority of Southerners, (and it is of them I desire to speak,) who professed to be farmers or mechanics, seldom imposed upon themselves any other duty than that of making money. Go with me through any State of the South, and observe the settlements as we pass. What attractions meet the eye of the stranger? Are evidences of refinement perched upon the gate-posts, while the dilapidated gate creaks upon a broken hinge? Does the lovely flower garden credit the occupants with cultivated taste, while the yard grows green with noxious weeds? Does the *cuisine* delight the olfactories with savory viands, while the inevitable "bacon and collards" ornament the table? Does the bed-chamber dispel the discomforts of a summer's night by regaling the eye with two or three thicknesses of feather beds? Are we treated to an intellectual feast by observing on the shelf, in the book-case, or on the centre table agricultural or mechanical journals, or such works as are indicative of the resident's profession? Or, are we not rather told, my neighbor over the creek subscribes to an agricultural journal, (perhaps The Rural Carolinian,) and I borrow it occasionally to read? Are these pictures not patent truths to be seen and met with here,

yonder, and everywhere throughout the South? They certainly are, and unless we educate ourselves to their disuse, we can never know that, practically, "it is not all of life to live," and should wrap ourselves in the delusion, "where ignorance is bliss 'tis folly to be wise."

It is an imperative duty to make our homes attractive, for "home is sweet be it never so homely." The venerable homestead, in the midst of beautified grounds, instils into the minds and hearts of children an attachment not inferior to filial affection. Every creditable device should be resorted to to create local attachments. Even the resting places of the dead should be frequented, and our graveyards and cemeteries made fragrant with the luxuriance of roses and evergreens. Familiarity with such spots draws tighter the cord of affection which binds us to departed friends, and induces that local contentment so much desired amongst our people.

An improved premises, if viewed simply with the eye of profit as an investment, is incomparably more attractive than the home of dilapidation. Let us call figures to our assistance in reasoning upon this subject. In most of the Northern States, land that command in market fifty dollars per acre, when appropriated to agricultural purposes have a productive capacity of perhaps thirty bushels of wheat per acre, worth in their market possibly thirty dollars; or sixty bushels of corn, worth but little more. Select a first-class plantation in Barnwell County, and what of its productive capacity? Alluvial bottoms will average twenty-five bushels of corn, worth always thirty dollars, and uplands will produce two hundred pounds of lint cotton, worth, in a depressed market, twenty-five dollars. Yet these Barnwell lands have no marketable value whatever. For such a condition of things many reasons may be assigned, but the one with which we have to do is the unattractive appearance of our premises. A little oil and white lead, lime and lampblack, properly applied, will often increase the marketable value of a plantation more than the assured fertility of the soil. That these simple and cheap devices are not more commonly resorted to, evinces that lack of taste and culture to which I have alluded.

The prime object of every planter should be to subsist at home. The details, however, by which this end can be effected must be suggested by the judgment of each individual planter. Wherever grain can be grown none should be bought; and if neither corn nor any of the small grains are remunerative, then cotton alone should be planted. But, Mr. President, if we study nature properly, I venture the suggestion, that where climate and soil will produce *nothing to eat*, climate and soil will produce *nothing to sell.*

The subsistence department is one generally difficult to manage successfully. You will remember that during our late war the officers in charge of our commissariat were constantly accused of inefficiency, and every private thought he himself would make a better commissary. Yet how many amongst us with unlimited privileges have proven themselves competent to subsist a squad much less a regiment or brigade? *Subsist at home, beautify home,* and make *home* dear to ourselves and our children, and attractive to

others, and our troubles will decrease, our happiness increase, and our duty be but half performed.

Beyond this, there is a duty we owe posterity that is imperfectly appreciated. Are you parents? Have you this day but a single babe prattling around your hearthstone? Is that child to grow up in idleness, and perchance become the leader of the fashions and in all else equally as worthless? Or is it destined to be useful to society and the pride of its ancient parents?

Whose duty is it to shape the destiny of the young? Since the day that the mother of the Gracchi made her sons immortal has not woman's love ruled the world? Then shall I presume to say, woman has a duty, and advise her perform it? The past shall dictate the lessons for the future. Southern women, admirable for their grace, beauty and affection, are and always have been remarkable for their practical versatility. When the surging billows of civil war were ebbing and flowing their bloody tides to and fro around and about our distressed land, many a painful couch was made soft as downy pillows by the tender touch of affectionate women. And when peace came, though there was no peace, the fortitude of our women caused to blush the despondency of our men.

Fellow-citizens, I speak not this to shame you, but to cheer you. With such comrades shall we not evoke from the rising generation a grateful God's blessing? Let us but deserve it, and we shall receive it. Let us dignify our calling, and instruct our children that labor is honorable, that idleness is despicable, and that industry is a charming virtue. Teaching them by example, and inscribing upon our professional escutcheon the three simple words—WORK, ECONOMY, HOPE—we shall in a few short years rejuvenate our beloved South, and again as of yore shall greet each other with smiles, because PEACE, HAPPINESS and PROSPERITY will have crowned our labors.

Cotton Culture in India.*

Cotton planters in the Southern States should strive to improve their great staple, and their methods of cultivating it, by means of every help which experience as well as science may offer them, and valuable hints may be gathered from the practice of those engaged in the same branch of industry in other countries, even though they may be, in the main, less advanced than we. Next to the United States, in the production of cotton, comes India, the only country whose rivalry is at present at all formidable, and we are glad to avail ourselves of the opportunity afforded by the publication of Mr. Rivett-Carnac's report to direct the attention of our readers to some interesting statements in regard to cotton planting in that antipodal region.

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* Report on the Cotton Department for the year 1868-69, by Harry Rivett-Carnac, Esq., B. C. S., Cotton Commissioner for the Central Provinces and Berars. Bombay: Education Society's Press, Byculla. 1869.

STIMULATING EFFECT OF THE AMERICAN WAR.

In the first place, we note the stimulating effect of the civil war in this country, and the consequent cotton famine, on the cotton planting interest in India. This is indicated by amount imported into Great Britain from that country, which, in 1860, was only 422,000 bales, but rose, in 1861, to 740,000, in 1862 to 805,000, and in 1863 to 1,043,000. The highest figures reached were 1,619,000 in 1866, since which there has been a slight falling off. The numbers given do not show the total exports from India, considerable quantities being shipped to China and other countries.

COTTON CULTURE UNDER DIFFICULTIES.

The scarcity of stock greatly impedes Indian agriculture, and discourages any attempts to introduce deep ploughing and other improvements. The area set apart for one plough and a pair of bullocks is twenty-four acres, and the able Commissioner naively remarks that "a pair of bullocks with twenty-four acres to look after, may well be excused if they prefer scraping the ground with a *bukhur* or light grubber, to toiling through the heavy black cotton soil with the *nágur* or deep plough, and we agree with him. The deficiency of stock also renders the manuring of the land to any considerable extent at present impossible.

MEASURES TO IMPROVE COTTON CULTURE.

Great attention is being paid to the improvement of the cotton plant by the selection of seed. In this, however, the Commissioner finds that little dependence can be placed upon the native growers, who, though glad enough to get improved seed, are unwilling to take the trouble of producing it by continual selection. The establishment of seed farms—a good hint for us—was therefore determined upon, and the plan, sanctioned and carried out by the government, has proved already its great value. A special officer has charge of each farm. Mr. Rivett-Carnac expresses the opinion that by this system of seed farms, and the careful selection of seed from year to year, great improvement will be affected in the character of the indigenous cotton of the country. The improvements affected in this country by the Dicksons and others are cited in corroboration of these views.

TRIAL OF AMERICAN COTTON.

Foreign varieties are also being tried to test their adaptability to the soil and climate of India. Of some American seed planted last year, Mr. Assistant Commissioner Byramjee Jamsetjee reports:

"The New Orleans seed takes the last rank as regards the quantity of produce, and it would not, therefore, be out of place to state here that endeavors to grow it in the country will not, in my opinion, ever be attended with success. Before beginning to flower, the plant seems to all appearance healthy and promising, but soon after that it sheds its leaves and appears to wither away. This was the case with it this year. It is true that there was not a sufficient fall of rain during the season, yet there was nothing in the weather to injure the indigenous cotton plants, (as is sometimes the case.)"

HYBRID COTTON PLANTS.

Hybridization is being tried with the hope of producing a cotton with the fine staple of the American combined with the climatic adaptation and pro-

ductiveness of the native plant. Major Trevor Clarke in a letter to the Commissioner writes of some crosses he has made as follows:

"'Vine' is the fine giant variety of New Orleans called 'Cuba Vine.' The crosses are noble cottons. I wish they may succeed, but they will want good farming and good land. No. 10 is from a strong variety of Sea Island, with rough seeds crossed by Vine. It is a splendid cotton.

"Nos. 5 and 6 are from two different plants of Sea Island; that marked O is very fine.

"Nos. 12 and 13 are from plants of the hybrid S. I. + N. O., recrossed by S. I. and N. O. respectively. One should produce a silky long new Orleans, and the other a Sea Island with hardier constitution.

"No. 7 Vine + N. O. A noble great plant, with strong good staple. Bourbon is the sort, as far as I can make out, which has so often been tried in India.

"I send you a crossed sample and its produce—its produce when crossed by Sea Island 16 and 17. The staple seems spare and flimsy somewhat, and the plant inclined to be robust and rampant. The converse cross will be, I think, better. I will send this by-and-by. It is not yet ripe.

"Bourbon by New Orleans (No. 18) seems a very nice cotton, and prolific.

"I send a few seeds (No. 13) of Peruvian crossed by my old hybrid. The staple is much improved and softened, and is remarkably strong. I will send more of these Peruvian crosses by-and-by.

"The sort labelled Pernambuco is not one of the large coarse Brazilians, but a very pretty, compact, prolific, little bushy plant allied to Sea Island, which I received from Pernambuco. The staple is short, but good, which most of the native black seeds are *not*. I have a very good opinion of the capabilities of this merry little sort. I have crossed many pods of it with different plants of Sea Island. Packets marked A, B, V, S, are from different pods crossed by the same plant of Sea Island; two other packets are from pods crossed by two other varieties of Sea Island.

This is suggestive, and we shall do well to follow the example here set by the planters of India.

FERTILIZERS IN INDIA.

The great success which has resulted from the use of commercial fertilizers in America, has excited great interest in India, and they are now being tried on the experimental seed farms, with a view to test their value in that country. The natives do not believe in manure, except where irrigation can be effected, saying that it burns up their crops. The Commissioner believes that manuring will pay if judiciously managed.

Some Australian manures are to be tried. The composition of two of these fertilizers is thus given:

Special Ceylon Coffee Manure.
(Equal to Liebig's.)

One hundred parts contain—	
Azotized organic matter rich in ammonia	28.10
Alkaline salts	12.30
Lime and carbonic acid	13.25
Sulphate of lime and magnesia	10.25
Phosphate of lime	25.35
Silica	3.75
Water (Hygroscopic)	7.
Total	100.00

Patent Phosphoric Potash Manure.

One hundred parts contain—	
Ammoniacal organic matter	23.5
Alkaline salts	9.5
Phosphate of lime and magnesia	17.5
Sulphate of lime	7.
Carbonate of lime and magnesia	18.5
Vegetable organic matter	9.
Silicate of alumina and sand	5.
Water (Hygroscopic)	10.
Total	100.00

The great source of supply for manure, however, the Commissioner thinks, may be found in night soil utilized as *poudrette.*

But Mr. Rivett-Carnac admits that there is some force in the native objection to manure without water, and that, as a complement to the fertilizers, they need

IRRIGATION.

"Give the cotton plant a plenty of manure and a plenty of water," the Commissioner says, "and the result is a magnificent crop." He adds:

"If we wish to increase our cotton supply, we must, I believe, call irrigation also to our aid. It will not do to manure the fields, and risk a failure of the crops from a scanty rainfall. We must *insure* the out-turn; and have water at hand, ready to be turned on if necessary—the works being undertaken by Government, and the cultivators paying an annual premium on the insurance in the form of a water rate.

"I am not unprepared for many arguments against the necessity of irrigation. 'Indian cotton does not require irrigation,' it has often been said; and to this I quite agree. That is to say, to get the cotton of the quality and in the quantity we now do, irrigation is certainly not required. The last season is the best proof of *that.* But then the question is, Are we to be content with the present results? Are we to be content with getting 50 or 80 lbs. of somewhat inferior cotton to the acre? If the answer is that we are morally bound to do our very best to increase the supply, then I altogether doubt any results being achieved without the assistance of the fertilizer; and the fertilizer entails irrigation: and I believe it will be found in the long run that irrigation we must have."

Other matters of interest, connected with cotton culture in India, furnish materials for another article, in a future number.

The Best Grasses for the South.

The question has been often asked, "What are the best grasses for the South?" On this, as on many other agricultural topics, there exists considerable diversity of opinion, as much depends on *soil, climate* and *location.*

In the Northern States, and other countries of similar cool and generally moist temperature, all kinds of grass find their most congenial home, and flourish with remarkable vigor; but in the gently undulating lands of the greater portion of the Southern States, and under our extremely warm and semi-tropical suns, their growth is more or less retarded, sometimes "burnt out," and their successful culture rendered frequently precarious and discouraging. Still, in the face of these occasional difficulties, there is no valid reason which can be adduced forbidding their cultivation. Partial failures may, and often do, result from unforeseen contingencies; but these *very failures* only call for greater perseverance, and continued effort under more propitious circumstances.

Experience now fully confirms the important fact that *clover* and the *grasses* are the great *natural renovators* of the soil, and are closely connected with profitable and scientific agriculture throughout the civilized world. Whilst

they add the most enduring fertility by their decomposition, and protection of the surface from the scorching rays of the sun, they also afford a rich supply of *forage* and *pasturage*, beautify the landscape, and administer, in several respects, to our comfort and indispensable wants. Every farmer should, therefore, have two or more lots *well set* with those grasses which experience indicates to be best adapted to his particular location, and thereby inaugurate the surest system of agricultural improvement. Below we subjoin the scientific and popular names of the most approved grasses, with brief notices of their respective merits. Most of them are old acquaintances, but they lose nothing by repetition.

Dactylis glomerata—"Orchard Grass, Cock's-foot Grass." This is an old and widely distributed species of great value. It is known in Europe, Asia, America, and in the north of Africa. In England, it now forms one of the most common grasses for pastures, and is highly esteemed among cattle feeders. It matures about the same time as clover, and should be sown with it for hay-making purposes. From four to six quarts of clover seed, and from one to one and a half bushels of orchard grass seed will be found to be a good combination. Hay thus produced is superior to clover alone, and is far more nutritious and inviting to stock. It is perennial, and bears *close grazing* better than most other grasses.

Poa pratensis—"Kentucky Blue Grass, Spear Grass," etc. An old and well known species in different portions of the Southwestern and Southern States. It only flourishes to perfection on *calcareous* soils. The "blue grass region" of Kentucky has become proverbial for its great fertility, fine stock of every kind, and rich supply of beef, mutton, milk and butter. It is a native of Europe, but is now extensively naturalized. Many plants of foreign introduction soon spread rapidly—become, as it were, "native, and to the manor born," in our congenial clime.

Phleum pratense, Timothy—"Herds Grass," of the New England States. Another old and well known grass. In the New England States it is usually sown with clover, and enters into the composition of the fine hay obtained from that section of country. In the mountainous coves and valleys of Yancey, Mitchell, and other counties of North Carolina, it flourishes with remarkable vigor, and may be raised with profit; but in our lower and more Southern territory, it is found to be less enduring, and more easily eradicated by stock than most other cultivated grasses. It is said to have been introduced into Maryland by Timothy Hanson, and hence the origin of its name.

Agrostis vulgaris, "Red Top"—"Herds Grass," of Pennsylvania. This is also a well known grass, and possesses considerable merit. It grows best on meadows *moderately moist*, and mingles well with other grasses in the formation of good hay.

Arrhenatherum avenaceum. This grass has been long known to botanists, and was described by Linnæus under the name of *Avena elatior*, literally Taller Oat. In its botanical affinities, it is closely allied to the common oat, and forms a food of similar nutritious properties. In the valley of Virginia,

and in several of the mountainous counties of North Carolina, it covers the hillsides with a beautiful carpet of green, and affords an excellent *early* and *late* pasturage—nearly dying out during the heats of summer, but rapidly reinvigorating on the approach of the cooler and moister fall weather. Its powers of endurance in our more Southern exposures has not yet been fully tested, but, judging from limited experiments in a few localities, it seems "to promise well," and is certainly worthy of more extended trials.

Festuca pratensis, "Randall Grass," of Virginia—Meadow Fescue Grass. Long known in England under the latter name, and, like the preceding, (Oat Grass,) flourishes well, and finds a congenial home in the entire mountainous region of Virginia and North Carolina. It is a tender, nutritious grass, and forms alone, or in combination with clover and other grasses, excellent forage. Wherever it can be grown successfully, it should be introduced, and added to the list of select cultivated grasses. But in making our selection of any cultivated plant, *adaptability*, under its different aspects, should always be consulted. We ourselves are *creatures of circumstances*, and, like the grasses, flourish best when our surroundings are congenial, and when we have the proper food, mental or otherwise, to feed upon, and continue our existence.

There are many other grasses which have been occasionally cultivated, but the preceding, briefly brought under review, are those of most reliable merit, and claim the attention of every farmer and promoter of agricultural advancement.

C. L. HUNTER, M. D.

Lincoln Co., N. C.

Thick Bales from Thin Acres.

You invite, I believe, Mr. Editor, communications detailing successful practice in the various branches of agriculture. Having reached more than ordinary results, with *cotton*, I propose to let you have a concise outline of my operations upon one and a half acres.

The tract in question was in rather an exhausted state when work was commenced last February—it being portion of an old field which had been cultivated without intermission, and without manure, for at least a decade of years. Some idea of its condition may be inferred from the remark that its average yield, last season, was seven bushels of corn from an acre.

I commenced by "laying off" rows three and a half feet apart, and breaking the middles with a common, large, turn-plough, penetrating deeply. In each centre furrow a long shovel plough was twice applied—the *second* time to widen the furrow for flat beds, not to deepen it, which a shovel will not do in sandy soil. In each furrow cotton seed was placed, at the rate of twenty-five bushels an acre—the seed being first killed by a thorough moistening, and smothering the heap with stable manure. Upon this cotton seed I applied equal parts of Peruvian guano, dissolved bones, land plaster, common salt and oak ashes, at the rate of one hundred and seventy pounds of the whole, an acre—all being well mixed and pulverized. To cover the furrows a large

bull-tongue was used, and the "middles" again broken with a half-shovel. The surface of the field was now flat, no beds nor ridges being visible. The seed furrows were opened with a small bull-tongue, towards the last of April; the seed sowed thickly in the drill, and lightly covered with a board.

The plants appeared the first of *June*, and were chopped to a stand of twelve inches the week following. About two weeks later the hoe was used, and the plants thinned to two stalks in the hill; immediately after the Dickson Sweep was run twice in each row, the right wing being set to cover young grass, which appeared incessantly from heavy rains. Hoes were used afterwards, and the same sweep four times, running as shallow as possible.

This may be reckoned a substantial narrative of our practice upon said patch; anything more would be but "leather and prunello."

From this acre and a half have been gathered 1,590 pounds of seed cotton, and there is certainly not less than two hundred pounds remaining.

I am persuaded to submit these results, not because of their *immensity* when casually considered, but as a just exhibit of the value of cotton seed as a fertilizer for *cotton;* and the efficacy of shallow work to promote its full development; and also to show what these two invigorators may accomplish when assisted by commercial manures, at an original cost of $5 00 per acre.

JNO. C. MILLAR.

Barnwell County, S. C., November 2, 1870.

In Reply to "Does Subsoiling Pay?"

I have had some experience bearing on this point. Horn-blend rock, close, tenacious red clay, some mica, and a large per cent. of iron, characterize my soil. The clay is about six feet deep, and rests on a decomposed granite, so soft that a shovel may be made to penetrate it by manual force. Such soil I consider inexhaustible, except from washing. I have a field of this quality, that has been in cultivation since the year 1810.

Believing this kind of land would be improved by subsoiling, twenty years ago I proceeded to the work, during the winter turning under a heavy stubble and coat of pea-vines, which literally covered the ground, with a two-horse mold-board plough, cutting eleven inches, and four inches deep, and a pair of good, heavy mules, and following in this furrow with a subsoil, then in use on my place, of the Williamson patent, the same that I see the cut of in the September number of The Rural Carolinian. I have the same yet, and consider it one of the best ploughs in use for all work. With this plough I subsoiled about six inches, and this land was much improved in its capacity to hold moisture, but the subsoiling failed to prevent washing, when the fall of water was in excess of what the land could absorb to the depth loosened by the plough. The land being somewhat rolling, the weight of water absorbed in the loose earth would cause it to slough off to the hard surface, if there were heavy rains while the land was loose; otherwise the

land was improved, and has been in cultivation ever since, producing fair crops.

On this kind of land drouth is destructive, but frequent rain is like the best fertilizer, and when a fertilizer is used, sufficient rain causes it to act like magic.

Some soils will hold water like a pan, some, the water will percolate through and go out at the base of the hill. Not only the kind of soil, but the peculiarities of locality should influence our decision on this subject. There are localities where the surface soil has been exhausted, when eight or ten inches below, you may strike a soil as good or better than the original mold on the surface. Here, I say, by all means, subsoil, and not only subsoil, but bring a portion of the subsoil to the surface, if possible; but if you have two inches of soil and a pipe-clay substrata, subsoiling can do no good, for in a wet season it will hold too much water for the crop, without subsoiling. What you now want is thorough draining, close and deep, with main trunk as an outlet.

Subsoiling is not to be considered as an inducement for plants to bury their roots deep, and I don't know that I could offer you a satisfactory reason for their doing it. On the best and most porous soil, cotton holds near the surface, having scarcely any tap-root; on the contrary, in tenacious clay, cotton sends down a long tap-root. The same difference will be found in corn, and on the same soil corn will root deeper at one planting than at another, and grow higher and higher up, seasons being the same. This is not owing to deeper ploughing. On sandy loam soil, through which you might run a cane with a sharp point two feet down, neither cotton nor corn, as a general rule, sends down any tap-root, and on this soil the water percolates through.

On old and exhausted land the benefit of subsoiling is, that it enables you to break the crust that has been formed by a long course of shallow ploughing; and on red, tenacious clay soil, if the object be to fatten a piece of land by feeding it with green pea-vines, or lucern—the clover of the South below 34°—it will improve the land by enabling you to turn it deeper, and make a deeper soil by the aid of vegetable matter and atmospheric influences, which, I find, acts powerfully on the red soil described.

Does subsoiling pay? It depends on the kind of land, and the object you have in view.

HENRY W. PARR.

Broad River, Fairfield County, S. C.

The Cactus Hedge Again.

I was very much gratified, Mr. Editor, at the success of your artist in transferring to THE RURAL CAROLINIAN, so truthfully, the picture of the Cactus Hedge.

In introducing a stranger, we naturally feel solicitous that the presentation be so conducted as to create a distinct, agreeable and favorable impression; this you affected to the life.

As sponsor for this new hedge plant, I feel bound to speak for it, whenever its claims are ignorantly or unwittingly questioned.

Dr. Wm. A. C., in an article on this plant, in the November number of your monthly, states facts in regard to its value as forage for cattle. The same statement has been made, too, by several Western men.

Another communication in the same number, signed by P. R. Flunks, is calculated to throw suspicion on the practical utility of the Cactus as a hedge plant, with the unthinking.

As a censor of Southern agricultural literature, I think you, Mr. Editor, deserve a little rasping, for allowing so crude a paper to appear in your monthly. To explain: suppose a correspondent should state that a fine crop of turnips were destroyed by blue-birds, would you allow such a statement to be published in your columns? Certainly not. Is that more absurd than the sentence in said communication, in which the writer says: "I found a caterpillar, almost exactly like the ordinary cotton caterpillar, had bored a small hole through the outer skin, and laid its eggs in the lobe."

If the science of Entomology establish any fact clearly, it is that worms having legs are but the infants of beetles, butterflies, moths or millers, and in that stage lay no eggs. Another sentence, at the close of same article, is equally absurd. It reads: "Would it not be dangerous to surround a cotton field with a plant that harbors, protects and fattens such dangerous enemies as this does."

Catching inspiration from his zeal, he comes boldly to the charge, that this worm which at first was like the caterpillar, is the caterpillar, with appetite so omnivorous, as to fatten on the pulpy lobes of the Cactus, or raid upon the cotton fields. Do, sir, hold your correspondents within the bounds of clearly defined facts, whether in art or in science.

Possessed with a habit of more careful observation than most men, I have familiarly known this plant, Palm Cactus, for twenty-two years, and have not in that time seen a diseased plant. It is emphatically *semper vitem.*

Nor has it a single insect enemy; neither scale, which is troublesome to many of the smooth lobed Cactus kept in hot-houses, nor slug, grub bug, worm or aphis.

Admit that the plant, of which Mr. Flunks writes, be the same, cannot its decline be readily explained or accounted for? He moved a bare plant. In doing so, the roots were shortened and the top left. How could nature readjust the equilibrium, without casting some of the top? Such is vegetable economy. This done, the discarded lobes, full of pulpy matter, commenced decaying; fermentation invited some beetle or fly to deposit eggs, where the grub or magot could batten on its putrid pulp. P. T. GRAVES.

Manack, Ala.

Book Farming.—Those who think our cultivated lands must grow poor as they grow old, will find food for reflection in the fact, that not many years back the average yield of wheat per acre in England was about ten bushels—it is now over thirty bushels. Brains accomplished it.

Importance of Science to the Farmer.*

MORAL INFLUENCE OF EDUCATION.

The march of civilization has shown that crime must be eradicated, either by punishment or education. Legal punishment has failed to be a remedy. On the other hand, where education has most prevailed, crime has diminished in proportion ; nor is it indifferent what kind of education. The works of man are finite, of the earth, earthly. Those of the Creator perfect and infinite. Familiarity with those works, and the laws which are inherent to, and which govern all matter, coëxtensive with the universe, organizes and purifies the mind, and elevates the soul to exalted aspirations. Progress is the spirit of civilization. Stagnation inevitably leads to conquest and death.

Civilization only advances through those laws which emanate from an Omniscient God. Like those lines, known to geometricians, which converge through all eternity, but which never meet, so with the student of nature's laws, he goes on advancing, and ever approaching the Deity, but never coalescing. It is thus that my comprehension teaches me to understand duty in this life, identity beyond the grave, and progress through all time.

Science comprehends a knowledge of the properties of all substances, and the laws which govern their action, the one upon the other. The application of those laws to our wants is called technical art, or the application of science to the requirements of civilization.

WHAT LIME HAS DONE FOR PENNSYLVANIA.

Pennsylvania in my time was called the Bœtia of America. The contrast between her position then and at the present time is due to the system of public schools, which are gratuitous, and have given her such ascendancy in power and wealth. Nor is her busy population confined to her furnaces, her mines, her rolling mills, her looms, and other multifarious fabrics to which you are tributary. Her lands originally no better than your own, frequently poor, have been made rich by the very material, (lime,) which slumbers in its wealth in your own county.

Science tells you, as it has taught the farmer of Pennsylvania, *et omne genus*, that a soil inadequately supplied with lime, will by its addition ensure a degree of fertility impracticable by any other means. That with it, and through its efficiency, grass will grow where it refused to grow before, and a degree of fertility ensured, impossible to reach by other practical means at your disposal.

WHAT LIME MAY DO FOR SOUTH CAROLINA.

That with it, and through its efficiency, the lands of that and other countries have attained to a production the envy of those who lack such valuable resources. Yet with limestone at your doors, and in the presence of incontestible evidence, there is not a kiln in operation in your county, and the State is tributary for nearly every bushel of lime used, to the State of Maine or other distant lands.

With lime, your hillsides, now sparsely clad with sedges, and other unprofitable growths that scarce keep the flesh upon the frames of your poor emaciated starvelings could be clothed with the richest clover, lucern, timothy, etc. The dairy crop of New York, (butter and cheese,) exclusive of

* Extracts from an Address delivered before the Oconee Agricultural and Mechanical Society, July 4th, 1870, by Hon. Thomas G. Clemson, of Pendleton, S. C., originally published in the Walhalla *Courier*.

hogs and cattle fed on whey, etc., in the year 1864, sold for fifty millions of dollars, a sum larger than the entire grain crop of that State, and double the value of the entire cotton crop of South Carolina.

FACTS ABOUT CATTLE AND HAY.

According to the census of 1860, the number of cattle in the South far exceeded those in the North, but in weight the advantage was greatly in favor of the latter. I live within an hour's ride of this picturesque-favored country, yet the merchants of our little town are actually supplying the population with salt beef brought from the markets of New York City, and sell the same for twenty-three cents per pound. The day was when cattle were driven from this region to New York, Philadelphia and Baltimore, and it is not improbable that the provision alluded to above started on foot from Texas.

The farmers North find it largely to their profit to keep their land in permanent pasture, on which their stock luxuriate, and thrive in a manner, and to an extent unknown to us.

The mower and horse-rake secure a nutritious hay, which carries their stock in a growing condition, and through their long winters to an early and profitable maturity, reaching a size, weight and quality never seen with us. With all our advantages of soil and climate, we keep our land constantly in fallow, until the soil is washed away or ceases to produce, and every blade of fodder is secured by the hand. With the price and scarcity of labor here, it is not surprising that beef, pork and even potatoes and cabbages brought from the North should undersell, and supply this population with food. Under such farming as is pursued in Carolina, your lands must deteriorate, and your population seek other homes, to commence another routine of deteriorating land.

WHAT SCIENCE HAS DONE FOR NEW ENGLAND FARMING.

The farms North are increasing in fertility and productiveness instead of deteriorating, as with us. Thousands of instances might be adduced which would show an increase of production of from two to four times as much as a few years since, and that without an increase of labor; the effect of the application of science, and the use of improved labor-saving implements.

In the New England States, from one to three thousand dollars and more is not uncommon yield for one acre, planted in apples, exclusive of the profits of other crops raised on the same ground.

The corn crop of South Carolina is estimated at about five bushels to the acre, which, according to my calculation, does not quit cost. Yet two hundred and more bushels have been raised on one acre in Richland County, South Carolina.

THE UTILITY OF IRRIGATION.

Under the system of tillage which prevails here, it is not surprising that we should suffer from the effects of long drouths, threatening, at times, famines more or less severe, which might be obviated in great part, if not entirely, by proper tillage, and the economical use of water, without which all agriculture is vain, and all effort without result.

In all countries long inhabited, and where population is dense, the beneficent use of water has been invoked, and land, that would be otherwise uninhabitable, by irrigation, becomes yearly more fertile. These applications have not been confined to modern times, but such resources have been extensively resorted to in all ages, and were found carried to a high point, among the aborigines of our continent when discovered. It was by the fer-

tilizing influence of the waters of the Nile that Joseph was enabled to fill the sacks of his brethren. The same practices used in those days may still be seen by the traveller, in that country. Famine and wide-spread death have almost disappeared from India, since the construction of her mighty canals of irrigation. Irrigation is extensively resorted to in England, France, Germany, Italy, Spain, China, etc. In Valencia, one of the provinces of Spain, whilst dry land is worth fifty dollars per acre, that which is irrigated sells for three thousand.

No part of the world is more bountifully endowed with such resources than Oconee County—indeed the whole upper region of Carolina. With such gifts judiciously applied, fertility may be secured to yourselves and descendants forever, putting it in your power to raise from two to four crops a year, as is practiced elsewhere, and that without other labor or expense than simply letting the water on and off. Millions of wealth passes before your eyes, disregarded, unheeded, to the ocean.

FISH AND FISH CULTURE.

Fish, as a diet, is among the best, nutritious, and rich in those qualities which impart vitality. Fish and fish offal are among the most valuable of fertilizers—for the same material you are paying millions which is brought from distant seas, and now digging along the coast. At one period, fish was a resource, and as common upon the table as bacon at the present writing. To produce the one requires care and constant attention; besides, the hog is a voracious consumer of food, which requires fertility and labor to produce, whilst the other would come to us full freighted, from the ocean, at each return of the seasons, with all the requirements of food for man and land, and at the period of the year when animals emerge from winter, emaciated and unhealthy. Such would continue to be the case, if improvident hindrances had not interposed. This rich water harvest once reaped without cost or toil is a thing of the past.

Fortunately, science is fostered by more enlightened governments, and an art has been created which, if properly practiced, ensures such supplies in rich abundance in those countries that are blessed with water. In that respect this country has cause to be grateful, and she has a right to expect, and to insist, upon the protection required to prevent the crushing out of a natural gift, so desirable and of such singular value. Your streams possess all the conditions, in an eminent degree, to ensure such harvest, if kept open to their terminus in the sea. Independent of migratory fishes, every one having a spring branch upon his farm, may have at his command an abundant supply of fish, for family use, if not for market.

Impregnated fish eggs or spawn have their prices current, and may be sent by express from one end of the continent to the other, or from continent to continent. Thus rivers and ponds may be stocked with choice varieties indigenous to other lands, or restocked with such as may have been crushed out.

Of animals, fish is the most prolific, and with attention to the laws which govern their existence and production will reproduce and increase with a rapidity and to an extent truly marvellous.

DIOCLESIAN AND WADE HAMPTON.

The trout which were placed in your mountain streams by a gentleman whom we all delight to honor—General Wade Hampton—have increased rapidly, and have become a resource to the country, an attraction to the epicurean, and the lovers of piscatory sport. Such gifts may not be undervalued, as we have a memorable record of the influence of that fish in civil-

izing a country long back in the vista of time, A. D. 304. Dioclesian, Emperor of the Roman Empire, fatigued with the cares of government, and with impaired health, formed the design of abdicating the purple, and retiring to private life. Attracted by the excellent *trout* found in the Hyader, a small stream in Delmatia, which empties into the Adriatic, built a palace not far from where the town of Spalatro now stands, covering eight acres of land, to which he retired, passing the remainder of his life, planting, building, and gardening. When solicited by Maximian to resume the reins of government, he rejected the temptation with pity, calmly observing that if he could show Maximian the cabbages which he had planted with his own hands, he should no longer be importuned to relinquish the enjoyment of happiness for the pursuit of power. The presence of that fish in that small stream, and the example of the Roman sage, caused science and art to flourish where they were unknown, and at that early period, the gentlemen of the neighborhood around Salona, the name of the Emperor's palace, founded a model farm.

Such are the mysterious influences of comparatively trivial circumstances. We may well remark, with the poet:

"That dire events from trivial causes spring."

UPPER CAROLINA AND SCIENTIFIC SCHOOLS.

Throughout the civilized world, during the summer months, the wealthy fly from business and cities to the invigorating influences of mountain regions, particularly such as offer attractions in hunting, fishing, or the contemplation of the sublime and picturesque, spreading wealth, enlightened views and manners. Scotland and Switzerland are examples of such resorts in Europe, the Adirondack and the Virginia Springs in our own country.

The Carolinas can boast of the highest land east of the Mississippi, whilst her waterfalls and picturesque scenery justly entitle this region to be called the Switzerland of America.

Already, to a limited extent, Upper Carolina has been the resort of those whose lot was cast in the malarious regions along the coast. Now, that the exigencies of a new era is upon us, demanding the diffusion of science for the development of our material resources, the establishment of such schools in this beautiful and healthy region, could not fail to give it an ascendancy over others less favored, and thus open up the only sure route to wealth and permanent prosperity.

Deep Ploughing for Worn-out Lands.

The agriculturist should know that all soils, and even granite rocks, contain more or less of the elements of vegetable growth. Soil while in a dense state, so compact that the gases which form the atmosphere, with the aid of the sun and rain, heat and cold, cannot penetrate and decompose them, will be sterile; while by disintegrating them they will become fertile, and their power for absorbing and combining with manurial substances greatly increased. Therefore it is that the same quantity of manure, the same season, on the same kind of land, yields far greater returns where the land has been deeply and thoroughly pulverized.

Chemistry shows that manures furnish not only plant-food, but, chemical manures especially, assist nature to develop its own elements of vegetable growth. If the soil is deeply and thoroughly pulverized, its power is increased to produce as well as to retain ammonia, carbonic acid and moisture—important elements—derived to a great extent from the decomposition of animal and vegetable matters in nature's laboratory. Lands now "worn-out" and deemed worthless for cultivation, may with deep ploughing and judicious use of chemical fertilizers, be made to yield better than any virgin soil.

H. W. R.

An Experiment with a Home-made Fertilizer.

In your August number, I gave you the recipe for a home-made fertilizer, stated that I was making an experiment with a few tons, and promised to give you the result of that experiment. I now propose to do so, as far as I can.

As the ingredients and plan of mixing were given in my first article, I will now only relate the experiment. I used it on cotton, corn, cabbage and turnips; and also used Dickson's Compound, and E. Frank Coe's Superphosphate by the side of it, on all of them. It seemed to do the turnips and cabbage as much good as either of them. In reference to its effects on cotton and corn, I think I can do justice to neither it nor the other compounds, without stating particularly the mode of preparing the lands, the manner of putting them out, the mode of cultivation, and the character of the season.

In the first place, my land is sandy, top and subsoil; and I think no concentrated manure pays so well on it as it would on a stiff or clay soil; indeed, I am satisfied that I lost half the money at least that I invested in commercial manures this year, to say nothing of the expense of hauling and putting out. To resume, however, my cotton land was opened pretty deeply with the shovel plough, and the manure drilled in the furrow at the rate of two hundred and fifty to three hundred pounds per acre; that is to say, the same quantity of either of the compounds wherever I used them. Stakes were put down to designate the rows where a change took place, and a note was taken of the place, kind and quantity used.

Immediately after drilling the fertilizer, two furrows were thrown on it with the same kind of a plough. It then stood for a time—say from one to three weeks—when the remainder of the middles was broken out, and the cotton chopped in on top of the bed and covered with a block. It came up, and grew off apparently equally well from all the fertilizers. After a while, however, I think during the months of June and July, we had some very wet spells, during which time and afterwards, the concentrated fertilizers of every kind seemed to lose their influence, and the cotton which had nothing under it actually grew as fast and longer than that which was fertilized.

In one field I left three rows, through the centre of the field, without any-

thing under the cotton; on one side of them the rows were manured with Dickson's Compound, at the rate of three hundred pounds per acre, and on the other side, with the fertilizer which I had prepared. The advantage which the cotton derived from the manures, was as I have described it: very flattering at first, but gradually it lost its power. I intended to gather it all separately and weigh it; but a bungling negro mixed the first picking, and consequently I did not afterwards do it; but am satisfied that no man could pronounce the effect of the one fertilizer to be superior to the other, and any man could see that either made better cotton than the natural land, but that neither made enough to pay for their cost. I was sorry, however, to lose the exact result of the experiment, and determined to be more particular with the corn.

The land where I made the experiment with corn was poor also, as was the cotton land, and had oats planted on it the year before. In January, the rows were laid off five feet wide, and broken out with a shovel plough, followed in every furrow by a bull-tongue, made somewhat in the shape of a scooter. In February, or first of March, they were checked three and a half feet. A heavy rain having fallen before I planted, (which was about the fifteenth of March,) and filled up the water furrows considerably, I opened them with another furrow, using the ordinary shovel plough, drilled the compound after it at the rate of one hundred and fifty pounds per acre over a certain portion of the field, dropped the corn right after it in the checks, and covered both sides at once with a small harrow plough. I then left three rows through the field without any fertilizer, and planted it in the same manner. On the remainder of the field, on the other side of the unmanured rows, Dickson's Compound was applied in equal quantities, and all was planted alike.

In gathering I took a hand with me, gathered one of the unfertilized and one of each of the fertilized rows, shelled them separately, and weighed them; found them rating per acre as follows:—natural land, 399 pounds; Dickson's Compound, 434 pounds; and the compound which I made, 490. Thus you see it made more than Dickson's Compound, and yet it scarcely paid the cost, which was about $33 per ton. I think, however, both would have made more, and I know the natural land would, if it had not been planted in such deep furrows, which seemed to serve as drains for some of the floods of rain which fell during the crop season.

Orangeburg, November 30th, 1870.

A. H. JOHNSON, M. D.

[Dr. Johnson's experiments will serve a useful purpose if they help to impress upon the reader's mind certain undeniable facts which they illustrate—the utility and importance of careful experiments in agriculture, the necessity of taking soil and season into the account, and the absurdity of relying upon one, or a few, isolated trials to settle any general principle in regard to fertilizers or modes of culture. If our correspondent has made no money by his experiments, he has learned something, and put himself in the way to learn more, which may profit him in the end.—Ed.]

The State Agricultural Society.

The present Agricultural Society is but a revival of the Society which was suspended during the war, and it may be of general interest to refer to some facts connected with its history. Perhaps it is not known to most of your readers that the Agricultural Society of South Carolina dates its beginning in 1784, and that it was regularly organized August 24th, 1785, by the election of Thomas Heyward, one of the signers of the Declaration of Independence as President, and Thomas Pinckney, Vice-President. Mr. Jefferson and other distinguished men of the country were enrolled as members. Many of them made communication with the view of furthering the objects of the Society, and it is an interesting fact that in 1786 Mr. Jefferson sent some seeds of a grass, found to be very useful in the South of Europe, in the hope that it would prove equally useful here. In Italy, 1787, he addressed a letter which is full of valuable suggestion, and among other things urged upon the people of the South the cultivation of the Olive. It appears to me that there is something in these facts to awaken a feeling of pride.

The very men who founded this great Republic were instrumental in giving existence to this Society. Let us think, too, of the labors of our distinguished men in after-times, and draw fresh courage from the association with which they surround it.

On the list of its anniversary orators are to be found the names of McDuffie, O'Neall, Poinsett, Hammond, Seabrook, Alston, King, W. Elliott, Calhoun, and others—all now departed. The Society it will be perceived has an honorable history. It dates far back in the past, and there is no doubt it accomplished no little good. Its revival will prove a great blessing. What may we not expect from our longer experience, from the improved modes of culture with the improved agricultural implements, the many valuable fertilizing substances which have been brought into use, and the general progress in arts and knowledge which has distinguished the present century?

Would it not be a patriotic labor for some one to collect and publish in a volume the interesting anniversary addresses of the Society? They cover the entire subject of agriculture, treat of our various products, are full of practical suggestions, and some of them have the additional value of learned research and scholarly execution. M. L.

University of South Carolina, Columbia, S. C.

The Esparto Grass, (Stipa tenacissima.)

The failure of rags and all the other ordinary paper making materials to supply the increasing demands of the manufacturers, has led to many experiments, with the view to find practicable substitutes. These experiments have been attended with more or less success in several directions, but the substance now the most popular in Europe, and the one that is, probably, the best

adapted to the purpose, is the *Esparto Grass*, also popularly known in Spain as the *atocha* plant, and in Algiers as *alfa* or *halfa*. It has not been used to any considerable extent in the United States, the duties on it being practically prohibitory.

The Esparto is indigenous, or at least grows wild, and flourishes luxuriantly in Spain, Portugal, Algiers, and North Africa. It grows on sandy shores and on the gravelly hills of the interior, on soil so poor as to be scarcely capable of producing anything else; at the same time it is observed to be greatly affected by different soils, or locations, growing with great luxuriance in one place, and maintaining but a dwarfed and feeble existence in another. It has never, so far as we can learn, been cultivated, but is a spontaneous production of the countries we have named, receiving no care whatever, but becoming more vigorous and abundant with yearly or semi-yearly gathering. It is not cut, but is separated from the root by pulling. It naturally grows in tufts or clumps.

It is estimated that fifty thousand persons are employed in the collection, preparation and manufacture of this fibre in Spain. It is also exported from the French port of Oran in Algiers.

It is believed that a vast extent of country in the Southern States, in the same latitude as that in which it is found in Spain, is adapted to its growth, and it is now, we are told, being tested at Washington by the Department of Agriculture. It seems to be difficult to propagate the seeds, in most of the experiments tried, proving to be sterile. In a letter now before us from a French gentleman in Algiers,—L. E. Jouanne, *Professeur au Lycée á Alger*, (*Afrique,*)—however, the writer says: "They say it takes the *halfa* a long time to grow from seed," which probably means that it is slow in germinating.

We have received from the gentleman above quoted, through a friend in this city, a small quantity of the seed of the Esparto, obtained with considerable difficulty from the province of Oran in Algiers. The seeds appear to be plump and perfectly developed, and we have strong hopes that they will germinate. We shall distribute a portion of them among nurserymen and others whom we have reason to believe have sufficient skill, judgment, and carefulness to test them fairly. We have been able to obtain no information in regard to the best time to plant them. This must be ascertained by experiment.

Charles L. Sharpless, the *New York Tribune* says, is a farmer who carries the precision and exacting noting of the counting-room, where he has amassed a great fortune, to the farm, and what he knows is valuable because he can give his knowledge in figures; for instance, he says he can winter a cow in the best condition and at the greatest profit on this daily ration: Hay, 15 pounds; meal, 8 quarts; carrots, 4 quarts. He feeds about equal meals morning, noon and night. It is doubtful whether anybody has better Jersey cattle than Sharpless.

Department of Horticulture and Rural Art.

Hints on Pear Culture.

EARS cannot be grown with any certainty of success, under common out-door culture, where the semi-tropical fruits flourish. I know that many fine specimens of this noble fruit have been grown in Mississippi, and elsewhere, especially in South Carolina, where the proper varieties have been planted, and the requisite care and attention in cultivation, bestowed upon them, but the cases are exceptional.

Very many failures are the result of ignorance of the three primary laws which govern the successful and profitable culture of the pear. First—there is exhibited a lack of knowledge in selecting the site for a plantation. If the site has not a suitable soil, continual loss will be the result. The second error lies in planting varieties which require a colder climate to properly perfect the tree and fruit, such varieties being worse than useless. Thirdly, there is improper cultivation in some cases, and a total want of cultivation in many.

I have known men who have tried to raise young pear trees in a grass field, and utterly failed in the attempt, and not only this, but some pasture their stock in the young orchards, so that when the cattle are tired of eating grass, they can eat the trees for a change of diet. But how about the appearance of the trees? Why! they look like so many withered pieces of brush stuck up, and in the end prove about as profitable, producing equally as many pears. So much for the grass and cattle system of pear culture, profitably considered.

Other very prolific causes of failure are, obtaining poor trees from the nursery, and careless planting; the last, I was on the point of saying, being the worse of the two. To remedy the first we must procure our trees only from well known, reliable dealers, who grow all their own stock, or only procure such parts of it as is absolutely necessary to fulfil the order, from some one of their own craft who is as reliable as they.

To remedy the second is, of course, in the power of the planter. It is better to defer the planting until you can do it right, if you are not able to do so now, than to *hog* them in, (excuse the term,) and then expect grand results, which, in the end, prove very insignificant. Do not plant anything, least of all, pears, without doing it thoroughly, and afterwards giving it the best of attention; then, and only then, expect the best results therefrom.

The first point to be considered is the selection of a suitable soil, with the proper exposure, where the pear, with ordinarily good culture, will succeed well. The best soil is one ranging from a clayey loam to soil of a coarser or heavier

texture, and not a light one, as some few growers yet direct. They will, no doubt, grow on soil moderately light, and produce crops for several or many years, according to the texture of the soil; but they will, nevertheless, die much sooner than those planted in a rather stiffer or heavier soil. Any corn ground that is moderately good will successfully produce pears if it has the advantage of a suitable exposure.

The exposure is regulated very materially by the state of the surroundings. If a belt of timber partially protect them, a cold, northern exposure is not undesirable. But if the cold spring winds from the north have full power against the trees, such exposures are not at all desirable. An eastern, and, in some cases, a southern or western exposure is the most desirable and suitable for this fruit.

Having fully determined upon the proper site for your orchard, have it deeply ploughed and thoroughly harrowed. Subsoiling is desirable where the subsoil is hard or lays near the surface, otherwise it is a waste of time and money. I am now only giving the treatment to be pursued for orchard culture. Garden or lawn culture being somewhat different, trenching, which is too expensive for the orchard, being then practiced.

When you have thoroughly prepared the soil, draw two-horse furrows twenty feet apart one way by sixteen feet apart the other, if for standards, but for dwarf trees ten feet by ten feet is the distance apart they are generally planted.

The holes should now be dug at the intersection of the furrows. They should be about two feet in diameter, and from eight to eighteen inches deep, the depth of the holes approximating to the depth of the soil; but deep holes, in poor or shallow soil, are very good—provided they are filled up with good, rich soil.

We now come to a very important part of the process, which is preparing the tree for planting. Very many trees have died from not properly trimming the roots and heads before setting them out into the orchard. Cut off all the roots or limbs which have been mangled by careless or inexperienced men in getting them out. Trim off the mangled members up to the sound wood, so that the wound will heal over quickly and nicely, without injury to the tree, which it will not do if the bruised parts are left on when planted, for they will then rot and communicate disease to the tree.

The main limbs, and some of the smaller ones, of the pear should be headed in about one-third; while other fruit trees, such as the peach, cherry, etc., should be cut back to almost a single switch.

In planting, take the tree, spreading the roots as evenly around in the holes as possible, and cover the roots with about six inches of good soil; now shake the tree to settle the soil around the roots, and fill in more earth, repeating both the filling and shaking, until the holes are full, and the ground slightly elevated around the tree, when you should press the ground firmly around it with the feet. When all are planted you can go over the orchard and straighten up all the leaning ones, and give the soil a second pressing with the feet.

The trees should have the best of care and close cultivation, the first few years at least, to enable them to perfect a good growth, for on a good growth the first year depends, in a great measure, the success of the orchard. A stunted tree will not come to anything; and insufficient care or cultivation the first few years, will give only stunted, unsightly and unprofitable ones.

Some writers advocate no manure for the pear, as it induces, they say, too large a growth of wood, which the tree cannot ripen. They add that, anyhow, it can obtain enough nourishment from the soil alone. Now this is all very true of our rich prairie soils; but there is not a very large extent of such soils in the old States, where the land has been successively cropped from time immemorial. Give the soil in the orchard judicious manuring and it will give you golden gains.

Hot, violent manures are not, as a general thing, suitable for the healthy growth of the pear; but when such manures are applied, either in rows or thinly broadcast, to hoed and cultivated crops, it is much more desirable than injurious; but putting quantities of it immediately around the tree, or on or near the roots at planting, is a very pernicious practice, and conducive to disease.

Muck, leaves, river rushes, etc., are the proper sorts of fertilizers to apply, to induce a healthful and vigorous growth of the trees, as well as to induce longevity and fruitfulness. Such manure can be used at any time, ploughed in, as it contains all the elements of plant-food, without the injurious, heating properties of animal excrements or stable manure.

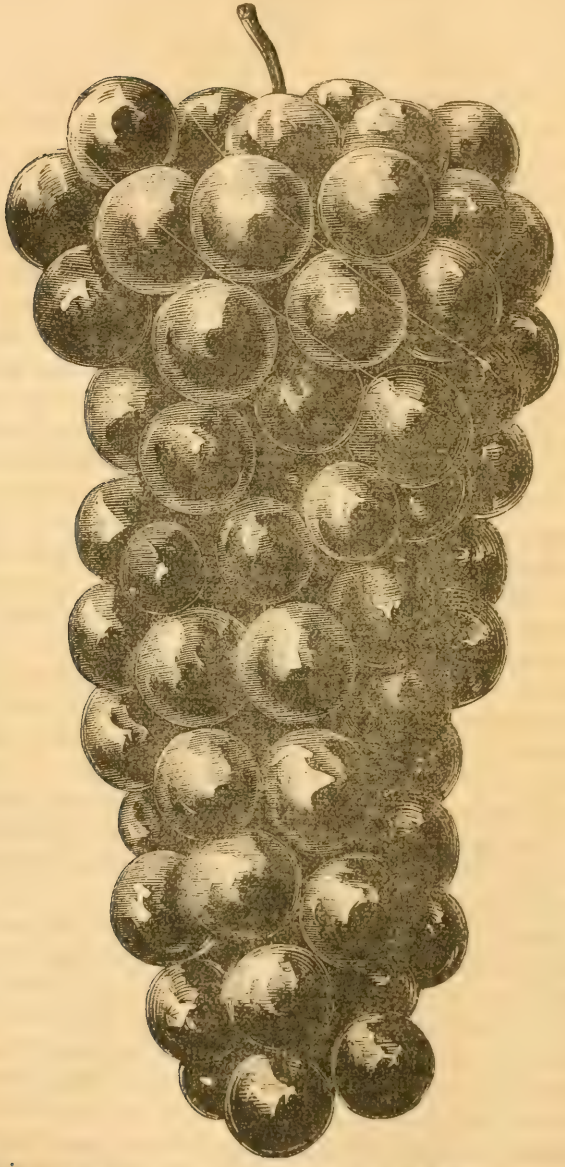
DAVID Z. EVANS, Jr.

Cecil Fruit and Truck Farm, Chesapeake City, Md.

The Nickajack Apple.

This handsome Southern apple, also known as Summerour, Carolina Spice, Red Warrior, and other local names, originated in Western North Carolina, a country famous for good fruit. Size, large; form, roundish oblate; color, greenish yellow, striped with dull red; flesh, rich, juicy and very good; time of ripening, December; keeps until April; tree, a strong but irregular grower, and a good bearer.

Ives' Seedling Grape.



Ives' Seedling is a very popular wine grape at the West. It was originated by Mr. Henry Ives, of Cincinnati, Ohio, who believed it to be a seedling of a Madeira grape. The grape is a dark purple of large size, and with compact bunches. The vine is a remarkably strong grower, and grows freely from cuttings planted in the open ground. It makes a dark, claret-like wine, much esteemed, especially by the Germans.

On Apples Spotting—IV.

THE FERTILIZING OF FRUITS.

This subject has a very important bearing on some species of apples, showing why it is fatal to their success as winter keepers in our climate.

Although the fertilization of fruits has been discussed more fully in the *Aberdeen Examiner*, still, an allusion here to the subject is rendered necessary to make intelligible the cause of the spotting of certain apples.

The strawberry is the most pulpy, juicy and tender fruit we grow, owing to its being the most perfectly fertilized. Take a Wilson's Albany, for instance, with say about one hundred pistils, through which the seeds, in each pulp, is fertilized. Besides these, the whole surface of the fruit is rendered sticky, with the saccharine secretion, to which the pollen grains (on falling) adhere. The secretion soon becomes more abundant, the pollen grains burst, and their fluid contents are absorbed through the sweet fluid.

After fertilization, the yellow skins of the pollen grains are found adhering to every portion of the pulp and pistils, showing that not only the seeds, but the whole pulp, has been thoroughly fertilized.

The peach is melting, juicy and luscious. Through its one pistil, its ovule is fertilized; but the flesh (*pericarp*) is thickly covered with hairs, (*tomenta.*) These are saturated with this sweet fluid, to which the pollen grains adhere in sufficient abundance to fertilize its flesh.

Should a part receive an insufficient amount of pollen, it remains hard, green, and sometimes knotty; and that portion never ripens, being unfertilized. This frequently happens when frost or rains have destroyed a part of the anthers. In those saturated with water the pollen is rendered infertile. It is true there is a very large amount of pollen absorbed through the calyx and sepals of the peach, both being covered with the fuzz and filled with secretion, the effect of which will not now be alluded to, not being pertinent to the subject under discussion.

The fertilization of the peach has been shown to be much more perfect than can take place with the nectarine, plum or cherry, neither of which is covered with fuzz. The sticky secretion is less abundant, and less pollen skins (after fertilization) will be found sticking to their sides, absorbing less pollen. Neither of them ever are as tender and melting as the peach.

To examine this process satisfactorily, take a cherry bloom, shake down the pollen grains, there will be found some adhering to the sides of the fruit. With a magnifier, watch a grain. In a few minutes a globule will be exuded from the flesh, large enough to cover the grain, which soon swells and discharges its contents; and, after the drying of the secretion, the yellow skins will be found sticking to the surface.

The pear has five pistils, through which the seeds in the five divisions of the core are fertilized. Its calyx and that of the apple is placed superior to the fruit. In the summer pear the calyx is larger than in the summer apple,

and through this larger calyx its flesh is more perfectly fertilized than the apple, its fruit thereby becoming more melting, juicy and luscious.

The calyx of both the winter apple and pear is small, and designated from its size as closed. Through this fertilization is less perfect, fitting it to grow slowly, the flesh remaining hard and firm, and coming to maturity only at the end of the season, when it can be kept in cool, dark cellars, and the process of ripening is retarded for a length of time.

During the last blooming season, the pistils of many apples and pears were killed by frost before the anthers became exposed. These afterwards were expanded, and shed their pollen on the calyx with its saccharine secretion. Anticipating that they would have no seeds, I watched during summer, and found many of both apples and pears with every seed abortive, though the flesh was as perfect as those having seeds; this proves to my satisfaction that the seeds are fertilized through the pistils, and the pericarp through the calyx.

Unfortunately for the South, we have imported many winter apples, requiring a season for maturity two or three months less than ours, consequently many of our winter varieties having the calyx closed, flesh hard and firm, are forced under our bright, hot, August sun into premature ripening, while the sap is not so abundant or rich, as it is later in the season. How impossible it is to succeed in making winter-keepers of such varieties!

Fortunately for us, we have many fine Southern seedlings from the Cherokee Orchards, in our nurseries and in every neighborhood, whose leaves will retain their vigor through our long season, the fruit only coming to maturity with the cessation of growth. Recollect that the leaf of each variety has its age of maturity as well as the fruit. This is forced more rapidly in August than October; in many kinds the leaf fails before the fruit is mature.

In ripening a perfectly matured fruit, (the skin having become more thick, and less porous than when green,) the starch in its cells is changed slowly into sugar; if immature, the change results in spotting and decay, and the crop is worthless.

W. B. WILKES.

Aberdeen, Miss., November 28, 1870.

The Guava in Florida.

In The Rural Carolinian of November, in an article on the Guava, information is asked for from some one who has fruited it. Having had some experience with it, I will respond.

It appears to flourish on almost every variety of soil. I have seen it growing with the greatest luxuriance upon the highest sand-hills, as well as upon land entirely too low and wet for the orange. Although not as hardy as the orange, it will bear a considerable frost without injury, and even though killed to the ground, (which does not happen here once in ten years,) it springs up again from the root, only missing *one* year in bearing.

Colonel Dancy, a neighbor of mine, had a large number of guavas in bush and tree form, some of the latter upwards of twelve feet high, with good sized trunks. All were killed to the ground by the freeze of Christmas, 1868, but have sprung up again to a height of eight feet and over, and are now full of fruit. I had a number of seedlings a few inches high, killed at the same time, but the delicate roots were uninjured, and all made a fresh growth. They are now goodly sized bushes seven feet high, and will bear a full crop next year. If there should ever be a great demand for this really delicious fruit, an immense supply could be raised along the St. John's River, as far north as Jacksonville.

Could not some one give us an article on the Date, soil and cultivation suited to same, and age at which it comes into bearing. It is a beautiful tree, and is, I know, quite plentiful in St. Augustine.

St. John's River, Fla. W. N. HART.

Golden Lily of Japan, (Lilium auratum.)

Among lilies the Japan varieties are preëminently the most showy and desirable; and none are more easily cultivated, as they are perfectly hardy, and will thrive in any good garden soil. *Lilium lancifolium album*, the white Japan Lily; *Roseum*, white, spotted with rose; and *Rubrum*, white, spotted with crimson, have been introduced into this country upwards of twenty-five years; but it is only within the last ten years that they have been cultivated extensively so as to bring the price within the reach of every admirer and cultivator of flowers. The writer can well remember his first attempt and disappointment in importing these lilies, then costing about five dollars each; the bulbs were so diminutive that not one arrived in a sound or healthy condition; and the entire importation was a loss. Now, the strongest bulbs can be had for less than fifty cents each. The latest introduction from Japan is the Golden Lily, (*Lilium*

auratum,) and no flower of recent introduction has created such an excitement as this. "The whole floral world, on its introduction, was jubilant with delight, hailing its advent as an astronomer would the discovery of a star of the first magnitude; and in every city, both in Europe and America, it has received ovations such as would have been dear to the heart of the most ambitious prima donna, or the most successful conquering hero." It is perfectly hardy, and the many failures complained of in cultivating it, are to be attributed more to the over-care of cultivators in growing it in-doors, or preparing too rich a soil. Our greatest success during the past year has been in planting out in a poor sandy soil. Roots which were just imported, and of which we knew one-half at least would have rotted in-doors, were set out on their arrival during a mild spell in midwinter, and bloomed in the greatest perfection during the past summer. It has been styled the "King of Lilies," and as Dr. Lindley truly remarked: "If ever a flower merited the title of '*glorious*,' it is this, whether we regard its size, sweetness, or exquisite arrangement of color."

The flower is from eight to twelve inches across, composed of six delicate white ivory petals, each being thickly studded with rich, chocolate-crimson spots, and having a bright golden band through the centre of each petal, with an exquisite vanilla-like perfume.

Within the last five years, bulbs of this lily have been sold from five to ten dollars each. Now, good sound flowering bulbs can be had of our principal florists from fifty cents to two dollars each—strong bulbs, frequently throwing up stems with twelve to twenty flowers. We have read recently of strong, well-established plants in England producing over one hundred flowers during the season.

To Mr. F. Parkman, of Jamaica Plains, Mass., is due the credit of flowering the first *Lilium auratum* in this country, about the year 1862. The above illustration is from the catalogue of the well known seedsman and florist, Henry A. Dreer, 714 Chestnut street, Philadelphia.

Garden Crops--What to Plant.

In our January number of last year, in reply to the question, "What shall we plant?" we gave a list of varieties of the various garden crops, such as we could recommend for general cultivation, premising that we did not attempt to answer the question definitely and positively for all, or indeed for any one. What is best for us may not be best for our next door neighbor, whose tastes may be different, much less for the reader whose soil and climate may also differ widely from ours; but, at the same time, our experience may be worth something, and serve as a partial guide in making a judicious selection. The kinds named in the following list are mainly such as we have tried and found desirable, our experience extending over many years, and being acquired in several different localities in the South.

We will repeat the list for the benefit of new subscribers, making such alterations as another year's experience may suggest:

ASPARAGUS.

Conover's Colossal.—The largest, and, we believe, the best sort in cultivation.

DWARF SNAP BEANS.

Early Fegee.—The earliest kind we know. Hardy, prolific and excellent.

Early Round Yellow Six Weeks.—Early and productive.

Early Valentine.—Not quite so early as the preceding, but excelled by none in quality.

Refugee.—Not very early, but very prolific and excellent.

Dwarf Wax.—Very tender and rich.

Black Turtle.—Good for soups.

POLE BEANS.

Carolina or Sieva.—This we think, on the whole, most desirable of all butter beans, but some prefer—

Large Lima.—Good and fine flavored, but not so prolific.

Indian Chief.—(German Wax Bean)—good either as a snap or as a shelled bean.

BEET.

Extra Early or Bassano.—Earliest and best.

Early Blood Turnip.

Henderson's Pineapple.—New, beautiful and good.

Castelnaudary.—An excellent French variety.

BRUSSELS SPROUTS.

Richmond's Compact.—An improved English variety.

BROCCOLI.

Large White Early.—A French variety.

Purple Cape.—The most reliable in our climate.

CABBAGE.

Little Pixie.—Very small, but very early, tender and sweet.

Early Ulm Savoy.—The earliest of the Savoys, and of the first quality.

Early York.—Well known and trustworthy.

Early Winningstadt.—Heads solid. One of the best.

Green Curled Savoy.—Best of all in flavor. Heads not so solid.

Flat Dutch.—An excellent late kind.

CARROT.

Early Scarlet Horn.—The earliest kind. Excellent. We plant no other.

Scarlet Altringham.—Handsome and productive.

CAULIFLOWER.

Early Asiatic.—Large. One of the best.

CELERY.

Large White Solid.—Popular and very good, but we prefer—

Incomparable Dwarf.—Smaller, but of excellent quality.

SUGAR CORN.

Crosby's Early Sweet.—Very early, and in every way excellent.

Stowell Evergreen.—Later and equally good. Remains fit for the table much longer than any other kind.

Old Colony.—Very productive.

CUCUMBER.

Early Russian.—The earliest kind we know. Small, but productive.

Early White Spined.—Early, and a great bearer.

Long Green.—A standard late sort. Excellent for pickles.

GUINEA SQUASH OR EGG PLANT.

New York Improved.—This is good, but—

Black Pekin, a new and distinct sort, is earlier and better.

KALE OR BORECOLE.

Dwarf Green Curled.—A very hardy variety.

KOHL-RABI.

Early White Vienna.—Is the best kind for garden culture.

LETTUCE.

Brown Dutch.—One of the hardiest and best old sorts, but objectionable to some on account of its color.

Boston Curled and Curled Simpson—Are excellent sorts for early sowing.

Perpignan.—Very large; stands the heat better than most varieties.

MELON (MUSK).

Netted Citron.—Small, but fine flavored.

White Japan.—Quality, the best.

Beechwood.—Small, early and excellent.

MELON (WATER).

Rattlesnake.—One of the best.

Lawton.—Pure seed is scarce.

Mountain Sweet.—Excellent where it will succeed, but not trustworthy in all localities.

Joe Johnstone.—A new sort of great promise.

Strawberry.—New, and said to be best of all.

OKRA.

Long Green.—Best and most productive.

ONION.

White Portugal.—Milder than the yellow and red sorts.

Wethersfield Red.—The best market variety.

Danvers Yellow.—Very productive.

PARSLEY.

Dwarf Curled.

PARSNIP.

Hollow Crowned.
Turnip-shaped.—Best for light soils.

PEPPER.

Large Sweet.—Good for pickling.
Long Cayenne.—Most used for seasoning.
Red Cherry.—Used green, for pickling.

PEAS.

McLean's Little Gem.—Dwarf, very early and good; grows only ten inches high.
Early Dan O'Rourk.—One of the earliest and best. Two and a half feet.
Eugenia.—The best of peas; two feet.
Bishop's Dwarf Long Pod.—Very productive and excellent; grows about one and a half feet high.
Champion of England.—Very rich flavored and productive. Late.
Large White Marrow.—A standard late sort.

PUMPKIN.

Cashaw.—The best variety for table use.

RADISH.

Early Scarlet Short Top.
French Breakfast.—Very beautiful; of rapid growth and tender. The best of all.

RHEUBARB.

Linnœus.—A large early sort.

SPINACH.

Round Leaved Savoy.
Large Flanders.—Largest and best.

SQUASH.

Early Bush Patty Pan.—The earliest and most productive.
Summer Crooknecked.—Better than the preceding, but later.
Hubbard.—A well known excellent squash.
Boston Marrow.—It is difficult to get this pure. When pure, it is not excelled by any variety.
Canada Crooknecked.—Small, but excellent. It often escapes the squash maggot when others get destroyed.

TOMATO.

Large Smooth Red.—Old, but better than most of the new sorts.
Large Yellow.—Of a different flavor from the red sorts. Very good.
Alger.—One of the best of the new sorts.
Lester's Perfected.—Large, smooth, solid and fine flavored.

TURNIPS.

Early Red or Purple Top.—The best for early spring and late fall or winter sowing.
Sweet German.—Very sweet and fine flavored.
Skirving's Improved Swede.

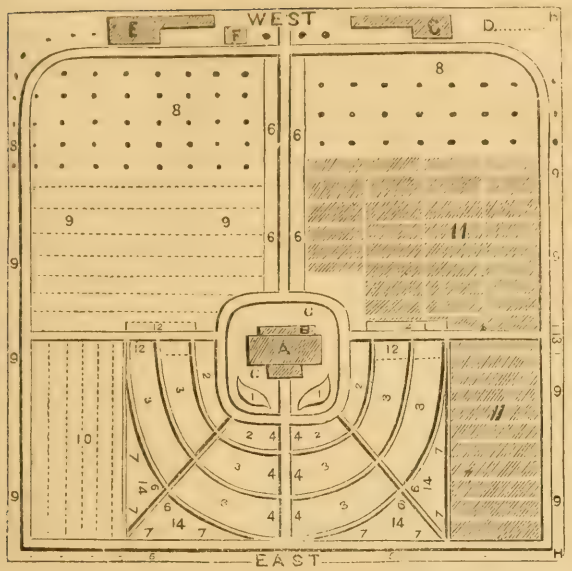
The varieties we have named are mainly well tested and known to be good, but they cannot all be expected to succeed in all localities, and soils, or to suit all tastes. We submit them suggestively.

Seed packages are generally labelled "fresh and genuine." Seedsmen, as a class, are probably as honest as any other class of traders; but there are knaves among them, and their facilities for swindling the planter are great. The greatest danger, however, in buying garden seeds lies in the fact that our small dealers generally have a stock left over, which they often continue to sell from year to year, sometimes, no doubt, ignorantly supposing that they are still as good as ever, when the fact is, they have entirely lost ther germinative power. If seedsmen would put the date upon each package, we should have a means of judging for ourselves of their freshness. As it is, the price of the seeds is the smallest part of the loss, for we often have a late crop, by replanting, or none at all, in consequence of planting worthless seeds.

Where the seeds desired can be procured near one's residence, of a trustworthy dealer, we would not advise sending abroad for them; but where this is not the case, they can readily be ordered by mail from any distance. Some trustworthy seedsmen advertise in The Rural Carolinian, and will send catalogues if desired.

A Scotch farmer has invented an appliance for irrigating which will apply the water in showers like rain. The cost of the machinery will be about $2,500, and it can be readily moved from field to field.

One Acre Enough.



We have books on "Ten Acres Enough," "Our Farm of Four Acres," etc. For some persons, *one* acre is enough — at least people living in towns and villages who cannot get more and seldom so much, are content sometimes to think so. One thus situated, asked a friend who was known to possess taste and skill in such matters, for a plan for his one acre farm, and the accompanying design is what he got.

The following explanation is all that the reader will require to understand it. It suited the owner of the square acre lot, and may give others a hint on laying out a similar piece of ground.

THE EXPLANATION.

A—House.
B—Porch.
C—Stable and shed.
D—Place for wood.
E—Poultry-house.
F—Pigeon-house.
G—Gravel-sand.
H—Board fence.
1—Bed of Verbenas.
2—Bedding plants, tender roses, etc.
3—Bulbs, annuals, perennials, etc.
4—Climbing plants.
5—Shade trees.
6—Ornamental shrubs, roses, etc.
7—Evergreens.
8—Fruit trees, dwarf.
9—Small fruits, currants, etc.
10—Strawberries.
11—Vegetables.
12—Grape Vines.
13—Hot-bed.
14—Grass.

Fish Ponds.

No doubt many farmers who read this journal have the facilities for constructing an excellent fish-pond; and this being the day of small things, when the enterprising are trying to make every edge cut that will cut, it is desirable that this source of profit and luxury be added—wherever it can be—to the products of the farm.

There are thousands of places, dotting the country over almost every where—natural ponds, small lakes and little brooks, at present of no use that may be turned to good account in this and other respects.

The streams might be dammed at little cost in time or money. The ponds, wanting no dams, would only have to be stocked, and then there would be no further trouble—except that of taking the fish with line as wanted; and *this* comes under the head of "recreations," an item that *every* well regulated farm should supply at no matter what cost. Of course there should be a small boat upon the pond for the accommodation of the family.

The margins of the pond might be planted with the willow, for making baskets, the cat-tail, for coopers and beds; and the pond would furnish, in winter, a supply of ice for the hot summer months. Thus other items of profit, besides fish, would be derived from those parts of the farm that have heretofore returned *nothing* to the owner. The thinking man will study the capabilities of his farm; and the energetic will endeavor to turn these capabilities into some good account. No part of the farm should lie idle. Such things as the above do not require manual labor, like corn or cotton. They are permanent improvements. There are many other items of this class, heretofore neglected, that will in time be converted into things of profit and pleasure.

B. W. JONES.

Cottage Home, Surry, Va.

Rural Adornment—The Affective Use of Trees.

From the bare and desolate aspect of many residences in the country one would infer, were the contrary not well known, that trees and vines are so costly and difficult to obtain that few can afford to plant them. The cost of

some rare foreign species, purchased of a nurseryman at a distance, may be considerable; but there is no lack of beautiful trees in the South, which can be had for the digging. Of native species, our evergreen oaks, our magnolias, our mock-orange or evergreen cherry, (*Cerasus Caroliniana*) our holly, our catalpa, and many others, deserve the admiration they receive from strangers, and are too little valued at home. The China tree, the ailanthus, and other foreigners, are perfectly naturalized, and almost universally diffused. With these, and the equally abundant flowering creepers and climbers of our woods and fields, foremost among which are the yellow jessamine and the trumpet-creeper, disposed with taste about our dwellings and the adjacent grounds, the finest effects can be produced; and no one can plead expense as an excuse. It need only cost a little time and labor at seasons when no more important work presses.

An Out-Door Covered Seat.

The plan of this piece of rural adornment and utility is a parallelogram of two squares, supported by two posts, each six inches square, and set the same in the ground. The roof is of boards with battened joints, set off with an ornamental ridge-board and balls. The seat is made of hard wood, rounding on top, and placed a little apart. Proper rustic treatment would suit the plan equally well, rough cedar posts being substituted for the square ones, and the accessories made to correspond. Ornamental vines, twining around the posts, especially if rustic, would add greatly to the effect.

Horticultural Miscellany.

IRON FOR FRUITS AND FLOWERS.

It seems to be a well established fact that there is a close relation between iron in the soil and the coloring of fruits and flowers. A correspondent of *The Dixie Farmer* writes:

"Very deep red clay underlies one ridge in my orchard; under another the clay is not so red, (the red in the clay is certainly imparted by oxide of iron.) The fruit on this red clay is more highly colored than on the lighter. Some ten years ago I applied anvil-dust, cinders, etc., to the soil under certain apple trees; the effect for several years was more highly colored fruit than formerly, the streaks as finely drawn as if pencilled, with a uniform waxen appearance."

Flowers are found to increase in brilliancy from the application of the

scales of iron from the blacksmith's shop or filings from the machine shop to the soil around them. Unleached wood ashes, applied at the same time, will assist the process as well as promote the growth of the plants.

PEACHES AMONG THE PINES.

"An old, experienced and respected friend of ours," the editor of *South-Land* says, "once planted a large peach orchard in the glades or open spaces of a pine forest, leaving the large pines as a protection to the more tender peach trees. He was very successful in producing healthy, long-lived trees and regular crops of fruit; and he always contended that the partial shade of the pines was more favorable to the peach than an open sunny exposure. The pine, he averred, drew nothing from the soil which the peach needed; and he often distinctly stated to us that he had grown peach trees of the most healthy and vigorous character within two or three feet of large and lofty pine trees. We cannot doubt these statements of our friend, as we know him to be a man of the strictest veracity and honor, and as we, ourselves, are cognizant of many facts corroborative of his practice and theory. We fully believe that if ever the sweet orange is made a success on our gulf and river coasts, the trees will have to be grown on the *north* side of buildings or belts of trees, or in the partial shade of our native forest."

THE JUJUBE TREE AND FRUIT.

The jujube tree (*Zizyphus sativa*) is perfectly hardy anywhere in the South below 32° north latitude, and along the Atlantic coast considerably north of that line. It forms, when full grown, a small tree with crooked branches and numerous and formidable recurved thorns. The foliage is of a dark, shining green, and very thick. Fruit oblong, of a brownish color, and about one inch in length, containing a single seed somewhat resembling that of the date. It dries readily, and can thus be preserved, and being of a pleasant sub-acid taste, it is generally quite a favorite with the people. It grows freely from suckers, layers, and root cuttings, and should be more generally cultivated.

PLANTS THAT CAN BE GROWN FROM ROOT CUTTINGS.

Among the numerous plants that may be readily propagated from root cuttings are: The *Acacias; Amelanchier*, or June Berry; Blackberry; *Calycanthus*, or Sweet Scented Shrub; *Pyrus Japonica*, and Raspberry. The cuttings should be made at once, packed in damp moss, and kept where they will not freeze till the buds begin to develop in the spring, when they may be planted out. Select long roots, and cut them into pieces of from three to four inches in length. Blackberry roots will generally take if planted at once where they are to grow.

ADAPTING MANURES TO SOILS.

It is an important point in agriculture, and particularly so in gardening, to adopt manures to the nature of the soil to which they are to be applied, as well as to the peculiar needs of the crop to be grown. If the soil is sandy and hot, then cold manures, such as that from cow and hog pens, with muck and leached ashes, will be found most suitable. If stable manure is used for such sandy soil, it should not be applied until entirely decomposed. On heavy, loamy soils, or strong clay, fresh stable manure, ashes and guano, or any kind of strong manure will be found most effective.

Dairy and Stock Department.

The Angora Goat in the South.

It is now more than twenty years since the Angora goat was introduced into South Carolina by Dr. Jas. B. Davis, at that time United States Minister to Turkey; but, from various causes, and largely from that which has been the great obstacle to all progress in the direction of diversified industry, the exclusive devotion of our people to cotton, it has never been extensively bred. The change which has taken place in the industrial condition of the country, and the awakening of a few, at least, of our people to the importance of making something besides cotton, has brought the Angora goat again into notice; and it is believed that it can be made a source of great profit, especially in the hilly and mountainous regions of our upper country.

The Angora goat is so called from a province of Natolia, or Anatolia, in Asia Minor, the principle place where the wool is bought and sold. It has, by some means, become known in this country as the Cashmere goat—a name which belongs to another wool-bearing goat extensively raised in Central Asia, but never, so far as we can learn, imported into this country, all the goats here called Cashmere being really Angora goats.

Our illustration, which is a very fine portrait, gives a good idea of the appearance of the Angora goat. The color of the full blood animals is almost invariably white. Their gay and intelligent appearance, their cleanly habits, activity and playful disposition, make them attractive on a farm; while in their natures they are so docile that they may be raised so as to be as familiar about the house and yard as the dog or the cat. Though they have great curiosity and enterprise, they also have strong local attachments, and after wandering all day, will generally, we are told, seek their usual shelter at night, especially if the weather is inclement. They do not break fences, or clear them at a single bound, as most other stock do, but will pass through a hole which is already made, will climb up a rail which leans at about forty-five degrees, or will bound on top of, and then over, a low fence. Any good farm fence five or six feet high will keep them securely.

They will eat almost anything that grows on a farm, but much the larger portion of their diet consists of weeds, bushes, briars and fallen leaves, which other stock reject. They do not, however, like to go with other stock, but require a pasture or range exclusively devoted to their use.

A warm shelter is necessary, even the tepid rains of summer seeming to be disagreeable to them. They also seek a shelter at night. They are generally, we believe, about as healthy and easily raised as other stock, and are very prolific, the females, under favorable circumstances, doubling their number every season. The does take great care of their young.

Their flesh is excellent eating, and the wethers weigh from sixty to eighty pounds, including from ten to twenty pounds of firm white tallow. Their fleeces weigh from five to six pounds, and the wool of young animals is now worth one dollar a pound in England, but decreases in quality and value, we are informed, as the animals grow older.

There are fifteen or more mohair (Angora wool) manufacturing mills in England, the most extensive of which, we believe, is that of Messrs. John Foster & Son, at Bradford, in which several thousands of men are employed. The demand for the wool at present is greater than the supply, and likely to be largely increased.

Last winter, Colonel L. M. Hatch, of Buncombe County, N. C., sent pelts from his flock to dealers in the wool in England, who called the attention of manufacturers to them, and received the emphatic assurance that any quantity of such wool that could be brought would be taken at once; and so anxious were the manufactures to secure an additional supply, that a gentleman engaged in the wool trade in England came over and visited North Carolina for the purpose of seeing for himself what could be done there, and of stimulating the breeding of the goats and the production of the wool.

We look with interest and hope upon this new branch of industry, but would caution our readers against a too implicit reliance upon the statements made by parties who are interested in selling goats rather than wool. We think that the latter can be grown with great profit, if the business be well managed, but that there are not drawbacks, as in all other pursuits, we do not believe. Experience is required in every business, and in this it is yet mainly lacking. No doubt some will pay dearly for it. The goats can now be imported for about $1.25 in gold, delivered in New York.

We publish these few facts, or what we believe to be such, with the hope of drawing out further information from those who may have bred the goats or studied their habits.

Profits of a Milk Dairy.

C. W. Howard, whose interesting papers in the *Plantation*, we always read with great interest, has some sensible remarks on the milk dairy for the South, a portion of which we quote:

It has usually been an objection to all attempts at dairy farms at the South, that our summers burn up the grass, or that it affords insufficient food to create a good flow of milk. The objection has weight, but is not insuperable. Milch cows can be profitably grazed for a greater number of months during the year at the South than at the North. By sowing winter grasses, or rye, or barley pastures, cows may be grazed during nearly the whole winter. At the North, in the same season, they must be housed and fed. Turnips at the South can be left in the ground during the winter. At the North they must be banked, or they are frozen and destroyed. Grazing is nearly, if not quite, as bad at the North in August as it is with us. In fact, it is worse, for at that season our crab grass usually gives a full bite to cattle.

In New Jersey thrifty, money-making farmers, give from $75 to $100 for cows yielding from seven to nine quarts of milk, which is sold at an average of five and a half cents per quart, and this process is conducted on land worth an average of $300 per acre.

Let us look at home. Our land is worth from five to twenty dollars an acre. We can buy good native cows which, under the New Jersey treatment, will yield an equal average of milk, for from thirty dollars to forty dollars. We can have good pasture nearly the whole year, winter and summer. Milk, I was informed, during a recent visit to Augusta, was selling at twenty cents per quart. In our other cities the price is very high. Yet, so far as I know, there is not, in the whole State of Georgia, an exclusively dairy farm of twenty cows.

It will be said, as our cities are small, that a large number of persons turning their attention to milk dairies would soon cause the supply to exceed the demand. It would do so ultimately, but not for a considerable time, as when milk is sold at six cents, four or five times as much will be used as when it is sold at twenty cents. At this price of twenty cents milk is a luxury, whereas it should be our cheapest food, especially for children.

But it would be impossible to exceed the demand for butter and cheese, for which we are paying vast sums annually to Northern producers. As good cheese can be made in Georgia as in New York.

Stock Miscellany.

SULPHUR FOR HOGS.

According to the *Prarie Farmer* hogs devour sulphur with great greed whenever it is found. It is for this purpose, probably, that they eat large quantities of soft coal, which contains a large amount of sulphur. Perhaps this is the most economical method of supplying hogs with sulphur during the winter, when they require a good deal of carbon. But in the summer it is better to feed it to them in substances which contains less carbon, on account of their producing less heat. Mustard is one of the best things for this purpose, and on that account some of it should be sown in every pasture into which hogs are turned. If hogs are kept up, or are in small yards, it is well to supply them with the wild mustard that grows in the fields, or highways, or to cultivate some of the better varieties for them. They will eat its leaves, flowers, seeds and stalks.

HOW TO MANAGE SITTING HENS.

1. Set the hen in a place where she will not be disturbed.

2. Give a large hen twelve or thirteen eggs, medium sized one ten or twelve, and a small one eight or nine.

3. Don't let the hen come out of the sitting-room until she has hatched, but keep her supplied with gravel, food and water.

4. When chicks are hatched, leave them in the nest for eight or ten hours.

5. Don't meddle with the eggs during incubation; turning them once a day, and all such foolishness, is apt to prevent the eggs from hatching. All of this is good advice from the *Southern Farmer.*

THE COLIC IN HORSES.

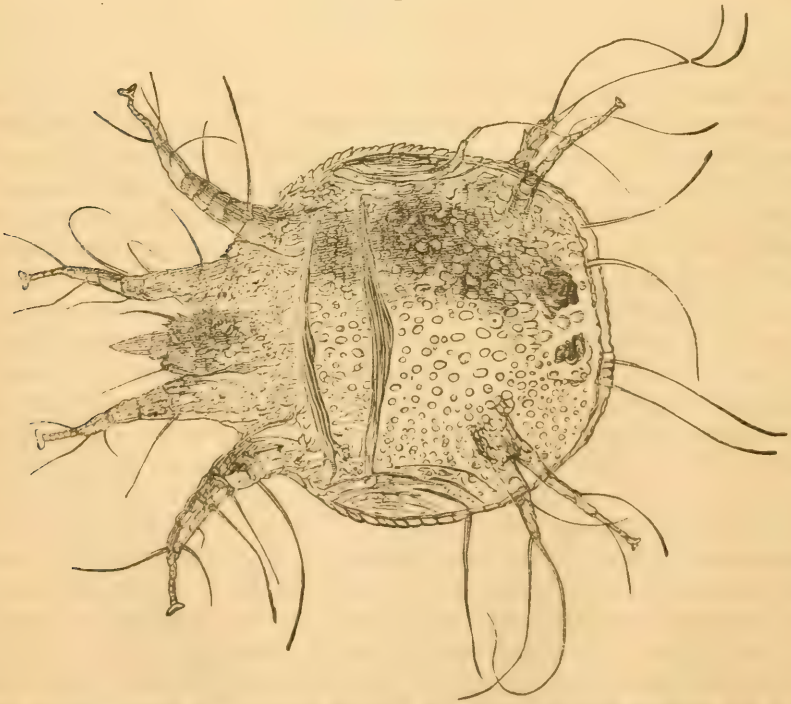
Dr. McClure, of Philadelphia, a Veterinary surgeon who has the care of several hundred horses, informs the *Practical Farmer* that he has never known the following prescription to fail of curing colic in horses: "Aromatic spirits of ammonia, half an ounce; laudanum, one and a half ounces; mix with one pint of water, and administer. If not relieved, repeat the dose.

Department of Natural History.

We have the pleasure of announcing that we have secured in this Department the services of Mr. CHARLES R. DODGE, Assistant Entomologist of the Department of Agriculture at Washington, who will devote especial attention to insects injurious to vegetation in the South, without neglecting, however, other branches of Natural History.

Specimens of insects, accompanying letters of inquiry, (securely packed,) may be sent by mail, post-paid, to Mr. DODGE, Department of Agriculture, Washington, D. C.

The Sheep Acarus.



The insect which causes the disease known as sheep scab is not a true insect, having six legs, but belongs to the *arachnids*, which have eight, though the young are said to have but six. Unlike the itch insect, it does not bur-

row in the skin, but remains on the surface, puncturing and irritating the skin, the exudations of which produce the scab, in which, in a short time, hundreds of these *acari* may be found. Then the disease is aggravated by the animal in its endeavor to bite, or scratch itself with its hind feet, producing raw places, which the blow fly takes advantage of in laying its eggs.

The mature mite is about the size of an ordinary pin's head; the accompanying figure of a female *acarus* having been magnified about one hundred diameters. The male is somewhat smaller than the female. The presence of the *acarus* in sheep is first shown by their rubbing against anything within reach, biting themselves, and finally using their feet in their vain endeavors to rid themselves of the pest. Various remedies have been proposed, such as carbolic acid (not carbonic) combined with one hundred times its bulk of water; an infusion of arsenic, one-half pound to twelve gallons of water, recommended by Mr. Spooner; a mixture, recommended by Mr. Randall, of one pound of sulphur, half a pound of oil of tar and two pounds of lard. Tobacco and potash with lard, or whale oil, are often effectual. Preparations of mercurial ointment, corrosive sublimate, hellebore, and other poisons, formerly used, are not recommended, especially as carbolic acid is safer and more effectual.

Insect Injuries.

There are many hundred insects known in this country to injure our trees and shrubs by boring in the wood, stems, or between the wood and bark, and a large per cent. of their numbers are to be found in the order *Coleoptera* or beetles. Of some the habits are well known, and, to a certain extent, the remedies against their ravages; but of many, we know comparatively little of their habits, and nothing to prevent the destruction of our forest trees. Among the *Buprestidæ* a most common example is found in the *Chrysobothris femorata*, an insect which, in the larval state, bores, not only in the apple, but in many forest trees. The insects of this family are rather elongate insects, often brilliantly colored, having square heads, and their hard, horn-like wing covers tapering to a point behind, giving them a wedge-shaped appearance, though they are broader than thick. The larvæ, which have large roundish, flat heads, of a chestnut-brown color, are often split out of fire wood. Some of the *Elateridæ*, or snapping beetles, are wood borers, *Hemirhipis fascicularis* we have reared in hickory; other species work between the bark and wood. Many of our forest trees are injured by a family of cylindrical beetles of small size, (*Scolytidæ*,) which are found just beneath the bark, the inner substance of which they devour, causing it finally to become separated from the tree, which eventually dies. The insects of the family *Bastrichidæ*, which, at one time, were included in the preceding, are likewise cylindrical in shape, though their heads are deeper sunk into the thorax. The *Bostrichus bicaudatus* is particularly injurious by boring in the twigs of apple trees in June. It is quite injurious along the valley of the Mississippi, but we can-

not say whether it is known to Southern orchardists. The most destructive family of *borers* are the *longicornes*, which are easily recognized, as their name implies, by their long horns or antennæ. Many of the species are very large, especially those in the genus *Prionus*, one of which measures over two inches in length. *Clytus flexuosus* attacks locust and hickory. The perfect insect is black, with transverse bands of yellow. Pine trees suffer from the attacks of a grayish beetle not more than half an inch long, (*Rhagium lineatum*) which lives between the bark and wood, forming a curious oval ring of woody fibre in which to complete its transformations. Another larger species, with antennæ often four or five inches long, bores, in the larval state, in the solid wood. Among the *Curculionidæ* we find a few stem-boring insects, as, for example, the potato weevil.

In the *Lepidoptera*, (butterflies and moths,) we have a class of insects many of which are borers in the larval stages. The perfect insects are provided with four transparent wings, and fly in the daytime. Their larvæ attack the currant, squash, grape-vine, peach tree, etc. The natural history of the peach borer, which is somewhat similar to the others, will serve as an example. The eggs are deposited in summer on the trunk of the tree, at or below the surface of the ground, the borers, when hatched, enter the tree and immediately go to work on the inner bark. In about a year it attains its full size, and makes its cocoon under the bark of the tree, or in the earth near it, and soon after immerges a slender steel-blue *moth*, somewhat resembling a wasp. The *Cossus robiniæ*, an insect belonging to another family, the larvæ of which are fleshy pinkish grubs, several inches in length, bores in the solid wood of locust. Other examples may be found in this order but the generality are leaf eaters.

The stems of trees and plants are injured by gall flies, *Hymenoptera*, which in laying their eggs instil into the wound a poison, causing unsightly swellings, like the galls often found upon the wild blackberry. The *Aphides*, belonging to the *Hemiptera*, puncture the bark and draw from the plant the juices which should nourish it; and, lastly, the bark is gouged and cut by various insects for the purpose of depositing their eggs. Some of the *Orthoptera* (grasshoppers, etc.) have this habit, though the seventeen year locust is a better example.

Answers to Correspondents.

INSECT NAMED, J. K., Montgomery, Ala. The bright metallic green insect with a bronzed or coppery thorax, from which extended a long slender horn, is the male of *Phanæus carnifex*, McL. The species in the tribe to which this insect belongs all live in excrement, and may be classed as beneficial as they act in the capacity of scavengers by removing decaying matter. This species, which is rather common, is one of the most brilliantly colored in the family to which it belongs.

When packing insects in cotton, it is well to saturate or moisten it with alcohol before starting, otherwise the legs and smaller parts are liable to injury by becoming dry and brittle.

Department of Mining and the Mechanic Arts.

Tanning--Panknin's Patent Bating Process.

In investigating the subject of tanning, it will be found invariably that the only improvement practicable as regards the acceleration of the time consumed, together with a thorough combination of the tannin with the gelatine, is the more perfect preparation of the hide or skin before the operation of tanning, *i. e.*, putting it in such condition by the application of the proper means, that it can receive the tan properly, take up all that it is capable of receiving, and make a firm, plump and durable leather.

As there are two processes in use by which hides or skins are unhaired, one by means of lime, the other by the sweating process, we must, of course, adapt ourselves to these circumstances, and, in the first instance, it is necessary to remove all traces of lime, as this substance combines with tannin and forms a brittle leather; and the next is to swell the fibres sufficiently, so as to allow them to absorb all the tannin and extractive matter which they can take up, and so form what is termed plump leather.

In the other instance, the hair having been removed by sweating, there is no lime to remove, but the fibres and structure of the hide are dense and compact, and if it is placed in the vat in this condition, it would not absorb all the tannin which it could take up, aside from which it would consume more time in tanning.

The method most generally resorted to, to obviate this imperfection in tanning, is the employment of an acid bate, (a solution of any substance in water, in which the hides or skins are suspended or immersed after depilation; for the purpose of preparing them for the subsequent tanning operation is termed a bate—either sulphuric, muriatic, or gallic acid is used;) to this method there is, however, one serious objection; although the proper swelling of the fibres of the hide is obtained, when due caution is observed in not allowing the swelling to proceed too far, still the objection alluded to is the fact, and one generally overlooked by tanners, that the albumen contained in the skin is soluble in this acid bate, and thereby an *absolute loss* in weight is occasioned; there are also objections to the manure bates, especially during the summer season.

The only method, therefore, which overcomes these objections is the employment of some substance in bating, which, while possessing an acid reaction, should not contain any free acid, yet should swell the fibres sufficiently, preserve the albumen by precipitation, and where the hides or skins have been depilated with lime, should effect the removal of all traces of this material. These three desirable results can be accomplished by the use of the patented compound, which combines economy in cost with the production of better and more durable leather.

The advantages, therefore, of this new method of tanning consist in the thorough and more perfect preparation of the skins, or hides, before tanning. After the hides or skins have been depilated, they are bated in this patent bate, and then become thoroughly prepared for the reception of any vegetable tanning material, by either of the old tanning methods, with ooze or bark.

The leather, as tanned by this process, is pliable and uncommonly tough; the time consumed in tanning is, of course, dependent upon the thickness of the skin or hide to be operated on.

The cost of material used in this bate is but seventy-five cents for each ton of hide or skin, which cost can be still more reduced by using the bate several times, taking the precaution, however, of strengthening the same before passing through it fresh quantities of hide.

The bate now about to be introduced renders the leather soft and plumps it up in tanning, so as to make the greatest possible weight of leather from a given amount of hide or skin, besides which it contains no free acids to destroy the fibres, or render the grain harsh and brittle; it can be used equally well either during the summer or winter season, and the low price of the materials used brings it within the reach of even tanners of limited means.

In conclusion, the writer begs to call attention to the fact that all leather tanned in this country is tanned by what are termed quick processes, in contradistinction to the old, slow method of tanning practiced in Europe; we seldom, however, see leather tanned at home which can equal the imported. In the above patented process, I claim to have discovered a method which overcomes these difficulties, by preparing hides or skins, previously to tanning, in such a manner as to make as good leather, by the quick process, as any imported, tanned by the old, slow method.

C. F. PANKNIN.

Charleston, S. C., December, 1870.

The Manufacture of Brooms.

The manufacture of brooms, unlike most other mechanical branches, requires only the most simple machinery and few appliances, unless it be carried on to a very large extent. The principal features of either one of our home factories may be summed up in a few items, the most distinctive of which are the drying and bleaching establishments attached to each of them. The brush, when opened out from the bale at the broom factory, is too dry and brittle for manipulation. Bundles, averaging twenty pounds each, are taken and made up from the bale, tied together and dipped both ends in a tub of water, from whence they are removed to the bleaching house, which, when full, is closed and the brush thoroughly purged, bleached and softened through those typical agents of purification, fire and brimstone. These bundles are then carried into the factory, where they are carefully assorted for the several uses to which its brush is applied: such as hurl, stalk, shoulder filling, etc. The brush is now brought in close proximity with the tying

machine, which, by a pedal and other most simple contrivances, enable the operator to adjust respectively but rapidly the several kinds of brush until the broom is complete, as far as brush, wire and handle are concerned. The broom, now in a round shape is passed to a clamp-like machine, called the sewing press, and there compressed into its final flat shape and sewed or stitched to ensure its future existence. From the sewing press the broom goes to the cutting and trimming machine, and there receives those finishing strokes which consign it to the hands of either dealer or consumer.

Some of the most competent of our artisans in this branch of industry, can make as many as fifteen dozen good brooms in a week. The various labors incidental to the broom factories do not appear to require any considerable or long-earned experience, if we may except their several intelligent directors and a few skilled operatives. These factories are becoming a prominent feature in our manufacturing interests, and, like all such enterprises, are rapidly developing other manufacturing interests. Until recently nearly all of the broom handles, consumed in our factories, came from Northern or Western lathes. We are informed that along the line of the Jackson Railroad, and at other accessible points, factories are now turning out handles of indigenous wood, such as magnolia, ash and cypress, in such quantities as will eventually enable our broom manufactures to draw their supplies in this line from our own State. The tying machines, sewing presses, and all other machinery required to carry on the business of a broom factory, are now made by our own mechanics. The first mentioned machines may be procured here, the best in the market for $40; and the expense of a sewing press is $25, add to the above the cutter, the wire and twine used in making brooms, and, we believe, we have given all the leading features of our broom factories.

Although, yet in its infancy, this particular branch of mechanical labor is destined to work to the ultimate advantage of a large class of the more industrious of our agricultural community, who have, until recently, given the subject that leads this paper little if any attention.

Mechanical art and agriculture are so assimilated that they necessarily become the parents of wealth, prosperity and abundance.

JOHN M. COLBY.

New Orleans.

The Steam Plough at Work.

The Vicksburg *Herald* gives the following account of the working of a steam plough on the plantation of General Wade Hampton, near Skipwith's Landing, Miss.:

The apparatus consists of two portable engines, which are so made that they run themselves without the aid of horse power over any road or field. The engines are placed at opposite sides of the field, and by means of wire ropes, four hundred and three yards long, draw a gang of ploughs from one side to the other. The ploughs cut the soil to any depth required, and at a rapid rate, faster than a man can walk. There are different sets of ploughs, for deep and shallow ploughing, for subsoiling, for extracting roots, and for making cotton beds. The latter is the most interesting, and makes a complete cotton bed, of over five feet wide at one operation. They plough on an average of twenty-five to thirty-five acres daily, and can do even more on loose soil. The engines are also useful for much other work. The General

has a large saw-mill which these machines take with them to the woods to cut lumber and make fencing. The heavy and broad iron wheels of the engines help to make good roads, and there is no better road in the country than the one through Hampton's Walnut Ridge plantation, five miles long. A few days ago one of these engines came down to the wharf-boat at Skipwith with six large wagons in tow. These were placed on the boat, heavily laden with lumber, and the "train" then started for home at a lively rate, crossing one of the levees. It would have taken twenty-four good mules to have pulled those loads. Another time the engine was "hitched" to a good-sized house and moved it back from the river bank several hundred yards in about twenty minutes, as fast as the men could keep the rollers under it. It is the intention of General Hampton to make these engines haul all his cotton to the river this season when the weather is favorable.

A New Sugar-Making Process.

Dr. J. Fabregas, of New Orleans, has discovered a new process of sugar-making, by which the juice of the cane is greatly improved, and its saccharine matter economized. The discoverer explains his process as follows:

"The methods I have discovered to work the juice of the cane without injuring the saccharum, and to obtain this latter without deteriorating its quality, consist in the following operations: The juice leaving the rollers is passed through a close metallic sieve so as to easily separate the liquid from the detritus of straw and leaves which it contains, and is received in the vat, where my preparation is applied in quantities sufficient to precipitate the organic acid, the fermenting principle, the gummy substance, and decompose the coloring principles, as well as to precipitate the earthy particles. The liquid is thoroughly stirred and left to settle for a half hour, when all these impurities having been deposited at the bottom of the vat, the clarified cane is carefully decanted into the kettles, and submitted to the ordinary process of boiling."

The improvement claimed by Dr. Fabregas lies therefore in the ingredients used as clarifiers. Their advantage is thus stated:

One gallon of cane juice, with a density of 8°, was found, after repeated experiments, to yield in sugar as follows:

By the Cuban process, 0.94 pounds.

By the Louisiana process, 0.75 pounds, with lime and 1.10 with vacuum pan.

By the Fabregas process, 1.45.

Thus giving a clear balance of more than 50 per cent. over the Cuban, and of 35 per cent. over the Louisiana process, in favor of the Fabregas method of sugar-making. In the brown sugars made in Cuba, he finds, by analysis, that by his system 100 parts of sugar contained 94 parts of saccharum and 6 of water and salts, whilst 100 parts of sugar, made according to the usual manner, contain 87 to 88 parts of saccharum and 13 to 12 parts of water and salts.

These advantages are conclusively evident and will probably bring about a complete revolution in sugar-making.

THE RURAL CAROLINIAN.

VOL. II.] CHARLESTON, S. C., JANUARY, 1871. No. IV.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

LESSONS OF THE PAST SEASON.

It has passed into a proverb that the lessons of experience are dearly bought; but it is not true, as the adage alluded to seems to imply, that fools alone are content to receive them. The wisest of us are often constrained to be taught in a school, in which the instructions are impressed upon our minds through our depleted purses. Some of the lessons of the past season have been of this character, and we presume are not likely to be soon forgotten. Lest they should have failed, however, to make the clearly defined and definite impression essential to their profitable application, we assume the disagreeable task of refreshing the minds of our readers by a brief reference to two or three of them.

1. In the first place, the cotton mania has produced its legitimate fruits, and those who have devoted themselves exclusively, or almost exclusively, to the "great Southern staple," have, as a rule, neither the corn and the bacon which will be required to carry on the coming season's operations, nor the money wherewith to buy them; nor is this stating the case at the worst. In many instances, the corn and the bacon consumed in making the present cotton crop, and bought at credit prices—perhaps $2.50 per bushel for corn and $40 per barrel for pork—are not yet paid for, and the cotton which was planted on the basis of twenty cents a pound must be sold for what buyers choose to give—say fifteen cents a pound, or less. What is the planter who has neglected to produce his own home supplies to do? The lesson, we fear, will be a hard one. We trust it will have its proper effect.

We do not desire to be here understood as discouraging cotton culture. While the staple continues to be in such demand as manufacturing material, it will, taking a series of years together, always be a profitable crop to grow wherever soil and climate favor it. It cannot remain long below paying figures; but we contend that it is the worst of folly to devote ourselves exclusively to this or any other single crop. Provide first, we urge, for the provision crops, then plant what cotton you can. With provisions for your family and laborers, and feed for your stock on hand, you may snap your fingers at the cotton speculators, and hold your bales in store till prices suit you.

2. Another lesson of the season—never perhaps so well illustrated before—is that there is no *panacea*—no universal remedy—for agricultural evils. Some have thought they had it in deep ploughing, without regard to the character of the soil; but their thin land, deeply turned over and inadequately manured, or not manured at all, has failed to justify their expectations, and they denounce deep ploughing as an error of book-farmers and theorists. Others have relied upon subsoiling to produce the wonderful results sought for; but their loose sands have remained sterile in spite of Murfee or Brinley, and their soft pipe-clays have been rendered as impervious as ever by the first heavy rain. Again, drainage has been made a hobby, and has also failed to prove a cure-all.

These experiences should teach those who have been the subjects of them—what science might have demonstrated for their benefit at less cost—that agriculture is a complicated art, in which deep ploughing, subsoiling and underdraining all have their time and place, but in which neither of them, nor all of them together are sufficient, or even at all desirable in every case.

3. In the use of fertilizers many a costly lesson has been learned during the past season. Setting out to make a big crop of cotton, and believing in liberal manuring, (sound doctrine so far,) many planters bought commercial fertilizers to the extent of their money and credit, and applied them with unprecedented liberality. While the results in a majority of cases has been all that could be reasonably expected or hoped for, there have also been numerous cases in which the money spent for these manures has been worse than thrown away. From three hundred to four hundred pounds to the acre have been applied to fields where the result has been a sad disappointment, the land actually producing little more than unmanured soil of the same quality. What is the proper inference? Not that commercial manures are useless, nor that the samples in question were fraudulent, but that there was something in the conditions, in the cases under consideration, unfavorable to their beneficial action. The character and condition of the soil, the nature of the season, the mode of application and other circumstances, must be taken into account, and the cause of the failure ascertained in order to enable us to profit by this lesson.

The manufacturers of fertilizers, who will suffer as well as the planters from these mistakes, should set on foot such investigations as will enable them to give more explicit directions for the application of their manures to different soils and crops. The results of such errors as we have alluded to are disastrous and discouraging, and beget distrust in fertilizers and in science, where neither is at fault.

ARE FERTILIZERS A FAILURE?

We have alluded elsewhere to cases in which chemical fertilizers were applied to crops the past season with unsatisfactory results. This partial failure does not prove anything against the fertilizers. Almost every planter can recall instances of similar results from the use of stable manure, yet nobody doubts the value of stable manure on that account. The failure is generally due to *injudicious application.* This we believe is mainly the cause of the difficulty with the fertilizers, and farmers should not allow the mistakes of the past to discourage them in regard to using fertilizers in the future. Let the causes of failure, where failure has occurred, be ascertained and removed, and success will follow. It should not be forgotten that the failures, even in the past exceptional season, have been few in comparison with the cases in which fertilizers have been applied with profit.

SHOW IT TO YOUR NEIGHBOR.

This is a good time to subscribe for THE RURAL CAROLINIAN; and the reader, who is presumed to be already a subscriber, can aid us in our enterprise, and extend the sphere of our influence and usefulness by calling the attention of his neighbors and friends to it. There are few of our present subscribers who could not easily send us one additional name, at least. Will *you* not try?

The Plantation, Atlanta, Ga., endorses our Colonel Aiken on "Fairs and their Object," as follows:

THE RURAL CAROLINIAN for this month, (December,) is before us, and we would be charged with extravagance probably were we to say all the good we really think of it. Among the good things are the spicy and telling strictures of Col. Aiken on the horse-racing excitement at our late fair. This was well deserved and well said, and we were glad to see the great weight of this first-class journal thrown in the scale of reform in this particular.

We unintentionally failed to mention in our notice of the ploughing match at the Fair of the South Carolina Institute, that though Watt's ploughs carried off the palm in the trial for the premiums offered for the best one and two-horse ploughs respectively, yet Brinley's *Universal Steel Plough*, exhibited by Mr. Graveley, got a premium as the best plough for general use. Premiums were also awarded to his subsoil ploughs and his cotton sweeps.

We tender our hearty thanks to the Commissioner of Agriculture, Hon. Horace Capron, for a copy of the Report of the Department for 1869. It is an exceedingly valuable document—the most valuable by far

of any yearly report yet issued. We purpose to give our readers the benefit of some extracts from its teeming pages.

OUR EXCHANGES.

The Christian Index and Southwestern Baptist, an excellent weekly religious and family paper, has just entered upon its *fiftieth* year. May its prosperity increase with its age. (J. J. Toon, Atlanta, Ga., $3 a year,)

The publisher of the *Index*, in behalf of the weekly press, propounds the following question:

"Please explain why the weekly press is expected to notice the regular issues of monthly papers or magazines, and never be noticed themselves? or the latter never to reciprocate the courtesy or favor."

We are not authorized to speak for other monthlies, but can answer for ourselves that we make no distinction between weeklies and monthlies in respect to notices; but our exchange list is so large that we should trespass far too much upon the space that we are under obligations to devote to other matters were we to notice all the publications of either class that come to our table. It should be remembered by our brethren of the weekly press, to whom we are very grateful for their generous notices, that where they get perhaps a dozen monthlies, we receive hundreds of weekly papers, and that while a notice is at least practicable for them, if they feel disposed to give it, it is not so with us. As a rule, *the weeklies ask an exchange with the monthlies*, and feel that it is but just to give them a monthly notice, because they wish to read and copy from them, while the monthlies, being generally made up of original articles, can make no use (save in exceptional cases) of the weeklies, however good they may be; and, therefore, if they get no notices they are in no way benefited by the exchange, but are simply giving away hundreds of copies of every issue for the benefit of their cotemporaries.

—— *The Scientific American* commences, this month, its twenty-sixth annual volume, and is still as fresh and vigorous as at first, and far more comprehensive and useful. Its practical suggestions may save hundreds of dollars to every household, workshop and factory in the land, besides affording a continual source of valuable instruction. It contains also a weekly official list of all patents issued. (New York, Munn & Co., $3 a year.)

——*The Young Folks' Rural* is a fine looking sheet of eight pages of reading matter—the largest of the young people's papers—full of entertaining matter—good stories, dialogues and pieces for school exercises, pictures, etc. It is designed to cultivate a taste for Rural life. (H. N. F. Lewis, Chicago, Ill., $1 00 a year.)

FARM AND GARDEN NOTES.

The Japan Persimmon.

Mr. Thomas Hogg, of Brooklyn, N. Y., an experienced horticulturist, who has resided in Japan, writes as follows:

In answer to your inquiry as to what Japanese plants would be desirable to introduce, and likely to succeed in the climate of the Southern States, I beg to say: That having reference alone to fruits, I know of nothing more desirable than the persimmon. In saying so I would not have you infer that I consider it a superior fruit to fine peaches or pears, but only that it is an excellent fruit, and a desirable addition to those we have. It has proved quite hardy in New York, and from the greater similarity of the climate of Japan to that of the Southern States, I have no doubt it will prosper equally as well there.

The Japanese Chestnut is a fine large fruit, much larger than our native species, and might be introduced with advantage in situations where the chestnut will flourish. It has already been introduced into California.

Variations in Plants.

Mr. Mehan, of the *Gardener's Monthly*, adduces a considerable number of facts, tending to show that it is not through the seeds alone that new varieties of plants are originated. Among other cases referred to, is one in which a stock of the sweet potato produced both yellow and red tubers. "No mixing through the floral organs," Mr. Mehan says, "can occur in this case, because it does not flower here, nor is there any way by which any 'mixing' could occur."

Protection against Drouth.

The *Vermont Farmer* finds a lesson from the unprecedented drouth of last summer at the North, in a field of ten acres of corn, which hardly showed its effects at all. *That*

field was thoroughly underdrained, well manured, deeply ploughed and deeply subsoiled. Drained fields failed, well manured land produced no crop, subsoiling and deep ploughing did not prove affective against the drouth; but when all these were combined, as in the field alluded to, "the land," to use the *Farmer's* expression, "fairly laughed at the heat and dryness, and went on its way rejoicing, as though it had no need of clouds and rain."

Sawdust for Cut-Worms.

A correspondent of the St. Louis *Journal of Agriculture*, has discovered that a handful of sawdust placed dry around the root of a plant will effectually protect it from cut-worms. His experimenting was on a pretty large scale, and in not a single instance was there a failure. He does not state what kind of wood the sawdust was from, but we suspect that it was pine, and that therein lies the secret of its efficacy.

Weeds as a Farm Crop.

J. J. Thomas, an old farmer, and a good one, says that fortunes are lost by farming in three ways—in badly wintering stock, in want of proper attention to rotation of crops, and in raising weeds. He calculates that it is easy for a farmer to lose $20,000 in forty years by raising weeds.

The Storm Signal Service.

Arrangements are rapidly being perfected for the commencement of operations by the storm signal corps, in every section of the country in which posts are to be established, for the purpose of noting the progress and direction of storms, and signaling the fact to distant points for the information of agricultural communities, and for other purposes. Charleston, we understand, is to be one of the signal posts.

Kerosene for Insects.

J. H. Springer writes to the *Carolina Farmer*, that he has found *kerosene oil* an effective remedy for insects (worms?) on cabbages. He sprinkles it on and around the plants from a pepper box, and thinks it promotes the growth of the plants. One pint for three hundred plants is his rule. If used after the plants begin to head, it might injure their flavor.

Hybridizing Plants.

Hybridizing is accomplished by fertilizing the stigma of the flower of one kind with a pollen from the anthers of another species or variety. The blossoms to be operated upon are usually confined in a wire or gauze netting, so as to preclude all insects that might interfere with the process. The seeds produced are then planted. The plant that grows therefrom is the new variety.

The Cranberry in North Carolina.

Dr. C. L. Hunter writes that during the last summer he discovered that excellent and healthy fruit, the Cranberry, (*Vaccinium macrocarpon,*) in the western part of Lincoln County, N. C., at a locality hitherto unknown to botanists. He intends to transplant a few vines for experimental culture.

MARKED PARAGRAPHS.

We are accustomed to read our exchanges pencil in hand, and to *mark* such articles or paragraphs as attract our particular attention as important, novel, or suggestive. A few of these marked passages will be transferred to our columns under this head.

—— *The Plantation*, one of the best of the weekly farm journals, has the following suggestion, which we heartily endorse:

As the season for putting in grain, and prepairing land for next year's crops, will afford us the means of deciding the much vexed question of deep ploughing, will not many of our readers give such particular attention to the subject as to lead us to the safest practice? We would be glad to record the proofs of these trials in this paper for the benefit of the country generally. We would suggest that the trials of the best depths for breaking lands should be made throughout a wide extent of country, and not only on compact soils, but even on those of a more open and silicious nature. Let us have the experiments.

—— The Macon (Ga.) *Telegraph and Messenger*, commenting on the low price of cotton, says:

It is an ill wind that blows no good at all. The prostration of cotton values — (for a thing which is worth only its cost to make it, is worth nothing to the producer,) is already having the effect to diminish production in the East Indies and other foreign countries, and if it shall moderate the eagerness to swell the crop in America and divert our labor in part to subsistence crops, we

shall do better. The Southern farmer who turns his main attention to diminishing his expenses by producing as many of his supplies as possible at home, and plants only such a cotton crop as he can manage consistently with his plan, will be able to thrive.

——A permanent industrial exhibition, on a magnificent scale, is to be established in New York City. Under the powers derived by their incorporation as "The Industrial Exhibition Company," a large number of wealthy and prominent gentlemen in that city, and in all parts of the Union, have associated themselves for the purpose of inaugurating there a permanent "Palace of Industry," somewhat like that at Sydenham, near London, but with new and original features, and of somewhat wider scope. A tract of land, embracing nearly twenty-three acres, has been purchased by the company as the site for its immense buildings.

MERE MENTION.

Russia has six hundred and sixty-seven cotton factories, employing 180,000 operatives. These enterprises were most of them commenced during our civil war. The factories are said to be the most magnificent in the world. Bokhara, Indian, and other cottons are used.

——The Commissioner of Agriculture at Washington, has just received from the Imperial Botanical Gardens of St. Petersburg a collection of Russian apples, embracing about four hundred varieties in duplicate, with grafts of the same. The latter will be distributed to nurserymen in various parts of the country.

——A. J. Butner and D. P. High, Whiteville, Columbus County, N. C., have sent us their "Catalogue of Scuppernong and other Native Vines." They have a new variety of the Scuppernong family of grapes called the *Tender Pulp*.

——Mildew, the *Boston Journal of Chemistry* says, is a fungoid plant, which has life or vitality like other parasite growths. Examine it under a microscope of 300 diameters, and its wonderful and beautiful structure will become apparent.

——Golour McCrain, of the Isle of Jura, one of the Hebrides, is said to have kept one *hundred and eighty Christmases in his own house*, and to have died in the reign of James II. "Old Parr" lived to the age of one hundred and fifty-three.

——A fig tree only twelve years old and forty feet high, is mentioned as growing at Vallejo, California.

——The Italian silkworms that were introduced into Louisiana thirty years ago have become so numerous, and of such good quality, that the silk manufacturers of Italy are now importing cocoons from New Orleans in large quantities.

——"The oldest inhabitant" in North Carolina is said to be one hundred and forty-three years of age.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

OATS AND ROOT CROPS.

Editor of The Rural Carolinian:

Mr. Pendleton's article on the oat crop, in your December number, reminds me of my own practice before the war. As I used mules and oxen largely, I had to provide food for them, and one of the most important articles was oats. Having a plenty of land, I took what land I wished to sow in this crop in fields cultivated the year previous in corn or cotton, both of which crops were laid by with large beds—for I am a Sea Island planter.

I had a furrow run with a one mule plough on each side of the bed, a little below the cotton or corn, throwing the earth towards the alley. Oat and Sea Island cotton seed, mixed in the proportion of six measures of cotton seed to each one of oats, were sown in these trenches or furrows, at the rate of about one bushel of oats per acre, and another similar plough followed, running still nearer to the cotton, or corn, covering the seed; but if the beds were low or small, the furrow thrown out for the trench was thrown back for covering. Six parts of Sea Island cotton seed is about as much as can be used with safety, as more would be apt to cause the oats to lodge.

Having a plenty of land, I thus sowed only two rows, or trenches, to the five feet bed. By this arrangement, two men, or boys, to plough, or trench and cover, and one elderly woman to sow, a pretty large crop of oats could be

quickly sown, and at a season when labor (required for preparing cotton for market) could ill be spared. I always began sowing about the beginning of January, as laborers could not be spared from harvesting earlier, and because the weather during the first half of January is generally mild, allowing the oats to come up and become green before any severe cold is apt to come to kill it in the white sprout. I cannot remember ever having had any killed by frost.

Of course, if I could have sown the oats in October, it would have been much better; but the cotton, or corn, was then on the land, and the labor could not have been spared under the system of slavery. I do not recollect ever to have lost a crop of oats by the rust, which prevailed pretty generally for several years, and only once did it suffer at all from it.

As the oats were always cut in the hard milk for feeding, by the sickle, I never cut down, in planting, either the cotton or corn stalk. Using oxen largely, and all the year round, I had to make special provision for them, therefore I tried to arrange my feeding crops so as to continue all the year round; therefore, in August and September, a large crop of Norfolk and Ruta Baga turnips, Mangel-wurzel, Sugar beet and Orange Globe beets were sown, as they came forward in succession, feeding my oxen until oats came in. The oats then fed them until the Shinney, or other early peas, and Root potatoes came on; and they lasted until Slip potatoes, which lasted until Norfolk turnips came in again, thus making the year round. While writing about the oat crop, I forgot to state that I generally followed the oat crop, manured with cotton seed, by the Slip potato crop, which rarely failed to prove a good one, thus making two good crops in one year, with the very light manuring of six bushels of cotton seed per acre. As this statement may appear startling, you can put my name to it. ROBERT CHISOLM.

OIL-NUT SHRUB AND RICE GRASS.

Editor of The Rural Carolinian:

The Oil-nut Shrub, (*Pyrularia oleifera,*) is found along the Alleghany slopes, and on the banks of mountainous streams from Georgia to Pennsylvania. It is frequently met with on the head-waters and tributaries of the Catawba River in North Carolina. It usually grows from three to eight feet high. The leaves are three or four inches long, slightly acrid, and oily. The fruit is about an inch long, pear-shaped, with a thin shell and large oily kernel. The compact flesh of the albumen, or kernel, is acrid and nauseating—so much so, that I have known boys to become very sick from eating a small piece not larger than a garden pea. The nut contains a large proportion of oil, which it is probable, under proper extraction, and purification, could be turned to good account. Our other oily resources are, however, so abundant and available, that the properties of our native productions have been too much overlooked, and not duly investigated.

"Rice Grass," (*Leersia oryzoides,*) flourishes well in numerous places of the South. It is usually found in extremely wet situations—along the banks of flat rivulets, and in ditches partially filled up. It may be readily recognized by its *panicle* or head closely resembling rice, and hence its most common name. Its extremely fragile and limber stem is generally decumbent, and becomes submerged in the water and mud, and requires it to be transported, after mowing, to firmer ground. It certainly makes a fine hay, and is worthy of more particular regard. Another species, (*Leersia virginica,*) with smaller panicle or head, is also frequently found along the banks of slowly coursing streams, and possesses the same good hay-making properties. C. L. H.

Lincoln County, N. C.

AN INQUIRY ABOUT LIME.

Editor of The Rural Carolinian:

I have an open savanna that I design putting into cultivation, and desire some information in regard to the quantity of lime per acre that would be required to correct the acidity, or whether to apply any or not. The soil is from eight to ten inches deep over a stiff clay foundation, and upon a partial analysis found to be composed entirely of sand and humus. Can you or any of your correspondents give me any information in regard to the management of such soil in any way?

E. S.

Manville, Sumter County, S. C.

We have no experience with such a soil as our correspondent describes, but hope some of our readers who have such experience will give him briefly the benefit of it. We should certainly try lime on it; but just how much per acre would be most beneficial, it is not easy to determine except by experiment. Probably, however, at least forty or fifty bushels might be used with advantage.—ED.

GARDEN NOTES.

Editor of The Rural Carolinian:

In your notes for garden work, you recommend for protection from *frost* to throw the earth into beds running east and west, planting cabbage seed on the south side. Allow me to give you a little item of my experience on this subject:

For several years I had a large Fragrant Olive plant, (*Olea fragrans,*) and a Banana shrub, (*Magnolia fuscata,*) in small tubs. They stood the cold near Orangeburg Courthouse, and in my piazza here on the west end, but thinking to give them a better chance, I placed them at the east end of the piazza, which runs east and west; the consequence was they were soon killed, root and branch. To-day, 9th December, going towards the eastern (seaward) side of this plantation, in the ruins of an old polehouse, I found tomato plants, and their fruit alive and green on the west side of the poles, while both were killed on the east (seaward) side. It is the first rays of the sun that kill; therefore, to protect rather tender plants, I should say throw up your beds north and south, and put your tender plants on the west side.

Try it, and judge by the results if I am not right.*

We are now enjoying the Kohl Rabi, which I can recommend as one of the most delicate vegetables of this season of the year. While it is as hardy, it is more delicate than any cabbage or turnip, and about equal to the cauliflower, and in season much earlier than the latter.

To show that I speak advisedly, I will state that I have Early Dutch, Yellow Globe, White French, Yellow Aberdeen and Ruta Baga Turnips, Cabbages, and Feather Stem Savoy, and Cottager's Kale in use, and I find the Kohl Rabi more delicate tasted than any of these, and equally productive and more certain. The seed should be sown in the spring, and the plants set out like the larger heading cabbages. The bulb looks small compared to the head of cabbage, but being solid does not shrink in cooking as they do. Hereafter I intend to cultivate more Kohl Rabi, and less cabbages and turnips for my own use. ROBERT CHISOLM.

December 9th, 1870.

HAULING OF RICE STRAW.

Editor of The Rural Carolinian:

The hauling off of rice straw has ever been a source of great annoyance. I find a simple rope, thirty or forty feet long, very much more expeditious and convenient than a wagon when the distance is not over two or three hundred yards.

Join the ends and lay it under straw delivery, the strands about three feet apart. As soon as a sufficient quantity has fallen upon it, pass one end over the straw and loop the other end through. To this hook the ox chain or swingletree and drive off. Immediately lay down a second rope to be filled during absence of team. All loading and unloading is thus saved, and a small yoke of oxen will haul as much in this way as they will attached to an ordinary cart. If more convenient, a hand with good hay fork will load ropes as fast as they can be hauled away.

North Santee, S. C. J.

INQUIRIES AND ANSWERS.

Windmills for Draining Rice Fields.

Having received several inquiries from rice planters, in regard to the adaptability of the windmill described in our September number, to the draining of rice fields, we reply that we have no personal experience in its use for that purpose, but the following statement, which we clip from the *Middleton* (Delaware) *Transcript*, seems to furnish a satisfactory answer:

We visited the farm of J. B. Fenimore, Esq., on Saturday last for the purpose of witnessing the operations of one of these mills, which Mr. Fenimore has had erected on the farm occupied by his son, Samuel Fenimore, Esq., near Odessa. The mill was erected for the purpose of draining a fine meadow of 100 acres, subject at times to overflow. It stands on the margin of Appoquinimink Creek, and empties the water from the meadow into the creek. When we arrived at the mill it was in full operation, the wind blowing a stiff breeze from the northeast, varying a point or two of the compass occasionally. The mill invariably headed to the wind, answering its rudder as readily as a vessel upon the water. It was geared to the outer segment of cogs, and the water-wheel made from 4½ to 5 revolutions per minute. The mill was then stopped, which took but a moment, so easily is it managed, and geared to the inner segment of cogs, which accelerated the motion of the water-wheel, driving it up to 6 revolutions per minute, the mill running smoothly all the while, jaring but little and making but little noise. The water-wheel has 12 buckets, with a side delivery near the axle. Each bucket will hold a barrel of water, and at a speed of 6 revolutions per minute the wheel discharges 72 barrels of water per *minute*—a Trojan labor which is astonishing to contemplate. The water-lead, from the mill to the creek, is 2 feet wide and 6 inches deep, and placed at a sufficient inclination to insure a rapid delivery; and yet the accumulating water ran over its sides, so rapidly was it drawn up from the meadow.

* Our correspondent mistakes our recommendation. We were speaking of *Cabbages*, which need no protection against simple *frost*, but against cold winds and hard freezes. In regard to protection against frost he it right.—ED.

—— "Beaufort" wishes to know where a good *corn and cob crusher* can be obtained. He adds: "I know the 'Little Giant' and its value, but that is moved by horse power. I wish something to run by steam. I want it for the purpose of economizing my food for stock."

—— Why did not L. H. L. try the *Dorking fowls?* The cholera is too often prevalent with me to try expensive fowls, but from all that I have read on the subject I think that the Dorkings among fowls, like the Devons among cattle, combine more good qualities than any other breed. R. C.

—— M. M. We think it possible you might procure a small quantity of *Japan Clover* seed from Mr. D. Briggs, Blackville, Barnwell County, S. C.

—— W. J. H., Palatka, Fla. Richard Peters, Esq., of Atlanta, Ga., sells *Essex pigs*, we believe. You can get particulars by writing to him.

—— T. N. H., La Grange, Ga. The *Evergreen grass* described by "Valley Virginian" in our number for March, is the Tall Oat grass of other writers, and is a good grass, but does not succeed everywhere. Probably it would suit your part of the country. We do not know where the seed can be bought. Will those who have it for sale please let it be known by advertising it? We know no work on *grafting* exclusively, but all books on fruit culture have the necessary information on the subject.

—— Will some one of our subscribers, who may have it to spare, please send us a small quantity—a pint or so—of *Doura corn* seed; and, if they have it for sale in quantity, let us know the fact, as there is some demand for it.

—— "Young Farmer," Newberry. One bushel of *Orchard grass* seed (if *clean*) and ten pounds of red clover to the acre, will be sufficient.

—— "Pickens." We cannot answer your inquiry in regard to the *Angora goat*, but the facts we give in another department of the present number may be of service to you. Flint's "*Milch Cows and Dairy Farming*" will be the best book on the subject of the dairy that you can buy.

—— Mr. B. W. Jones is right in his supposition that the "*Cassaba*" is not a new variety of melon; for, in looking over my Gardening memoranda, I find that I planted the Cassa(*w*)ba melon 10th March, 1847.

R. C.

—— B. W. J. asks some one to give the method of preparing *turpentine, tar and rosin* for market, with costs and other items.

—— C. L. H. Dr. Porcher's "*Resources of the Southern Fields and Forests*" can be had by addressing Roswell T. Logan, at this office. Price, $3 00; or, prepaid by mail, $3 40.

LITERARY AND HOME DEPARTMENT.

THE MURILLO DE LA MERCED.

CHAPTER IV.

Naples! The road thereto and the sights thereat; the city, the places nigh; the bay, the coast, the islands, the skies, *the* mountain; to do none of these had I come: to journals, guide-books, prints, and panoramas I leave them. Naples had for me a greater interest than itself. Was I, at the Hotel Crocelle, within—perhaps—a stone's cast of the living lady whose image had haunted me so many years! Might not the caressing air which I breathed have passed from her lips to mine! How my querulous heart yearned and grew faint at such fancies!

I had told Charters the object of my sudden journey, and the difficulty I anticipated in attaining it; but at the same time, while freely confessing that it was connected with a story and a mystery, I had explained how a promise bound me to keep both concealed. He had accepted my explanation as frankly as I gave it, like the good fellow and gentleman he was.

"Oh, we won't hear anything about difficulty. Let us begin asking at once. Here!" he shouted to a waiter. "Look in my face; there is a principessa—something—lives in the Lavinaio nel Quartiere Mercato: we have forgotten her name—what is it?"

The query seemed to galvanize the man; his eyebrows went up and his lower jaw down,

with an expression of extremest surprise; and, in a way very unlike his usual Neapolitan liveliness, he gasped out,—

"Una principessa?"

"What do you mean?—don't you know anything about her?"

"Signori, it is impossible; only very wretched people live in the Lavinaio."

Charters and I looked at one another. "Ah," I said, "there must be some mistake."

"Si, signori, certamente."

Stumbling thus at the very threshold of our search was very disheartening; but Conway, with a promptness to which I could lay no claim, proposed that we should sally forth at once.

"Let us out and scout for ourselves," he said; "we can look any plan in the face afterwards with a chance of guessing what change we ought to get out of it."

I eagerly assented, for nothing could be so intolerable as inaction. The direction given by Stapfer was to a part of the city so little known and so unexplorable by strangers, that, to discover and penetrate its recesses, we had to place ourselves under the guidance of an ancient cicerone, an old acquaintance of Charters, whom, to the palpable disgust of our *garzone* at the Crocelle, he insisted upon having fetched from the Grand Bretagne.

"He is the prince of ciceroni," Conway explained to me; "he is the only southern Italian I ever knew that can hold his tongue—that cuts his story short when you have had enough of it, tells you only what you want to know, and knows it when you want him to tell it."

Pioneered by this accomplished individual, in the diminishing light of a southern evening, we started on our quest for the nameless princess. We were more reserved towards our cicerone Pinto than we had been to the waiter, directing him only to lead us to the Lavinaio nel Quartiere Mercato. Crossing the Piazza Castello and the Marinella, we plunged into a maze of ill-lighted narrow streets, walled in by lofty houses, loftier churches, and monastic buildings; the former of which, as we advanced further, became meaner in character, with signs of indigence,—within, seen through open windows and doors—without, marked by such accessories as dirty, half-naked children, and by more squalid-looking men and women. It was evidently one of the "slums" of Naples into which we had got; when, opposite a passage between the houses ascending to higher ground beyond, Pinto, who was preceding us, stopped and pointing at this entrance, to our profound mortification, exclaimed—

"Eccola! zare ees it."

Brought up suddenly thus, Charters and I turned to each other in blank surprise. As we caught one another's looks, our disappointment seemed to strike us both from such a ludicrous point of view that, deep as my feelings really were, excited as I had become—perhaps owing to this excitement casually diverted, I know not—but I joined him in an explosion of laughter which vexed my soul, but only became the more obstreperous for the vexation. The idea of the exquisitely-refined and lovely being I had painted—a graceful, dignified princess, too—existing among the squalor of such a scene—it was too absurd! What could Stapfer mean by sending me to such a spot? it must be a lapse of memory—a mistake in name! Whatever it was, I indicated to my companions the abandonment of all hope to find the object of my search in that locality, by returning at once, without remark or inquiry, the way we had come.

Arrived at our hotel, accompanied by Signor Pinto, I presently had occasion to appreciate the judgment with which Charters had selected him from all other ciceroni. He sat quite silent, though it was soon seen how observant, while we spoke hastily and despondingly of our disappointment. By the time we paused he seemed to have perfectly made out our purpose and difficulty.

"Ah ha! signori," he said, "you look-a fore som-a von-a? You no-a find-a he'em, you tell-a me—I find-a he'em, eef he be in Na'pli."

"Of course you will!" shouted Charters, enthusiastically; "you're just the fellow! I say tell him about the Princess—he knows lots of people that can help him. Only, dash it! you must make it worth his while—say a trifle for his time, and something handsome if he succeeds; you don't mind stumping up, eh? Is that your view of things, too, Signor Pinto?"

"Ya-es, ya-es, sare; per-hap-a I mose go-a many people, an' I mose stum-a too."

I assented with all my heart to the plan thus suddenly started; indeed no other even glimmered out of the deep obscurity of the subject. The terms for his assistance were soon arranged, infinitely to Signor Pinto's satisfaction. In return—and he undertook this with a confidence which astonished Charters and myself—he was to discover the Princess who sat to Stapfer ten years ago, and obtain her history—actually her parentage, birth, title, education, fortune, and all relating to her while she remained on Neapolitan territory; moreover, if she were still within its bounds, he was to carry me where I might see her, and assure myself that it was the veritable person to whom this information applied.

"I'll tell you what," Conway said when Pinto had left, "I'm blest if he isn't in the police! I never thought of it before. Every two out of three in Naples are spies upon the odd man—that's it!"

Pitting action against irksomeness of suspense, under Charters's guidance, I employed the next day in an excursion to Baiæ. On our return, late at night, we found Pinto at our hotel. There was a look of conscious success about him that at once raised in us the highest hopes, though, to both my simple and Charters's boisterous demands, he steadily refused information.

"Eef you have-a only a lee-tle *bozzetto*, you call-a a skitz-a, eet sall do mosh-a help-a?"

"A sketch, eh? Will to-morrow morning do?—we are dead tired to-night."

"O ya-es, ya-es, ya-es! eet sall do ver well-a. I come-a to your-a brick-a-fast-a."

Our hopes sprang higher yet, when, next morning, we observed Pinto's eyes glisten and his thin lips curl into an assured smile, as he keenly regarded the sketch I had just made. Still he refused to utter a word for our satisfaction; yet there was something very significant in the way he addressed us on leaving.

"Perhap-a, signori, you go volk-a wis-a me in ze mornin' zu-morrow? Eef-a you-a stay here-a, I sall come-a in ze mornin'."

Conway smacked his hands together with a report like a pistol. "My mother was a frau, and my father a mynheer, if we arn't within a day and a half of a discovery now, eh?" he said.

I could not help agreeing with him, or else Pinto was deluding us with false hopes by false looks; as that, however, could in no way be worth his while, we determined to believe in next day.

That next day I sprang up, hopelessly wide awake, hours before my usual time, and I was usually an early riser. Thoughts, the combination of fear and expectation, seemed to sting rather than soothe me. I gave it up, after the first endeavor to swallow at breakfast. As little could I sit still, or bear companionship—even that of Charters. I felt as if I should choke within walls, and retired with my cigar to the balcony, where, for what appeared a double morning, I paced restlessly to and fro, to the intense amusement, I believe, of several heaps of idlers, who, from carefully-selected positions, speculated upon my actions to the confirmation of their previous general impressions, that "gl' Inglesi sono quasi tutti pazzi."

At last! A *citadina* stops. Ha! it is Pinto. A moment after he is with us, and invites us to accompany him.

I suppose it is very foolish, but I can't help it. All my life long it has been the same with me: at any sudden excitement, or at its culmination, however prepared, my heart, after giving one wild bound, seems to stand still, and a deadly faintness ensues. All this occurred now. But Charters, prompt in all things, mastered the situation in a moment, by thrusting a liquer-bottle, to its shoulders, into my mouth with one hand, and with the other dabbling me with iced water—which ran down inside my neckcloth—till I was gasping from two causes at once. I observed, while recovering, that he prudently put the maraschino-flask in his pocket.

Pinto did not follow us into the carriage, but took a seat upon the perch beside the driver, manifestly to elude the torrent of questions I, or certainly Conway, would have poured upon him. We drove at a fast pace for quite half an hour, when stopping at Mergellina, at the foot of Posilipo, Pinto descended, requested us to do so, and proposed,—

"You please-a volk-a a lee-tle-a vay wees me, a-a-ha, signori."

Resolutely shaking his head in silent reply to Charters's rapid interrogatories, he preceded us up a narrow lane, bordered on each side at intervals by wretched tumble-down patched-up houses — each, however, with a luxuriant garden. I refrain from describing my sensations while, as I believed, approaching the solution of the great mystery of my life, except, that wild astonishment at the possibility of finding it in such a neighborhood rose high above all others. My heart beat so thickly that I had to pause twice during the ascent and avail myself of Conway's support, as well as of the prudential little item out of his pocket. We had gained a considerable elevation. The lane almost lost the character of one, and had become more like a half-marked path. The huts were more scattered, smaller and meaner in appearance than those we had passed, and all the people whom we saw were of the *marinari* or *lazzaroni* class. Still, looking around on each side, and further, further on, nowhere was an indication of any such place as might enshrine my peerless lady visible. At the foot of a sharp pitch that arose in our front, above which on one side we could see the tiles of a hut, I was pausing again, breathless and in bewildered perplexity, and to cool my forehead in a tiny runnel of water that here came singing down beside the bare track to which our path had dwindled: Pinto had not stopped, but, having climbed the hill, was pausing in an attitude of unmistakable, self-complacent, dignified triumph upon the summit, leaning one hand upon a broken wall, with the other gracefully posed upon his breast, his head erect and slightly averted—as if he were standing to have his picture painted.

"What can he mean?" both Charters and I exclaimed at once, rushing up to his side.

"Eccola!" he shouted, very coolly taking a pinch of snuff, facing round towards the hut, waving an arm in the air, and letting it fall in a straight line, pointing in the same direction—"Eccola principessa!"

Leaning against a stony ridge, over which the little rill tumbled in a tiny cataract and rushed away in a hollow it had worn at the side of the path, there was before us, at a dozen yards from the track where we were standing, a low cabin, with no upper story, made of wood and clay, and with a few squared but irregular stones built in at the corners and in courses along the base of the walls; these last having projecting offsets thrust out from them at the sides, evidently to enlarge the room within as circumstances made further space necessary; the whole covered with broken tiles. A low wall, like a bank, of earth and stones, seemingly held together by the ivy that grew luxuriantly on both its sides, enclosed one margin of a grassy plot in front; the other being bounded by the rocky cliff against which the structure rested, and which was evidently part of an old quarry, whose excavation had left the level ground whereon the cabin stood. Approaching we had heard the merry laughter and shrill cries of children romping; and, contrasting those reckless noises, the voice of another child singing with lovely tones a melody like a cradle-song — slow and long drawn out, and sweet and soothing as the wash of a calm sea on its sands. But when we reached the side of Pinto, all had become hushed. The children—two sturdy little fellows of four and six, a small girl of three, another of eight or nine, singing to sleep a drowsy *bambino* lying on the moss of the bank at her side—awed at the sudden appearance of strangers, stopped, spell-struck, in the midst of their play, and gazed at us with wide-open eyes. Beyond, beside the door, in the shade of a rude trellised porch tendrilled with a vine, sat a female, her face turned from us, with busy fingers occupied in weaving a net. Her head and bosom were covered with the ordinary *fazzoletto*, and she wore only the short skirt of the women of Naples, which, as she sat, revealed the bare legs and naked feet. Strange!—neither the cessation of the children's noisy play, Pinto's loud exclamation, nor our presence, seemed to have aroused her attention; for still she continued to push and jerk her shuttle, and keep her head averted, low over her work. While I stood looking and speechless—a good deal of indignation mixing with my astonishment—Signor Pinto maintained such an air of conceited complacency and self-laudation, opposed to my utter disappointment, that I felt much more inclination to kick him than to ask for an explanation. But as I advanced to resolve the faint shade of doubt that must necessarily have remained if the woman's face were unseen, the youngest child, perhaps alarmed at my approach, sprang to her and clutched her dress. The mother turned her head and gazed at me. One look into those wonderful, wistful eyes—yes, it is the Princess! Utterly forgetting in my agitation all things but that she was before me, I asked:

"Do you remember me?"

The wistful eyes caught the fact of my speaking, but turned from my face to that of her eldest child, who had come to her side. It was the young girl who, in her Neapolitan dialect, answered—

"*Mammà non ci sente, e non parla.*"

Why should I not tell? I made a sign to Charters and rushed away up the hill, till alone and unseen; then I wept, as men with loving hearts weep, when hope seems rudely parted from their lives for ever.

In the evening of that day I received from Pinto a neatly written document, quite official in character. I append Charters's translation·

(Serafina Pagano.)

"Born at the Piano Sorento, 1805. Deaf and dumb. Left Sorento, 1820. Lived subsequently in Naples, Florence and Rome. Became a model for statuaries and painters, by whom she was known as 'La Principessa.' Married, 1823, Bartolomeo Starace, *marinaro*, in Naples. Domiciled in Naples since 1823. Of good character."

On the day but one after, by arrangement through Pinto, she came to our hotel, accompanied by her husband, a thick-set, bandy-legged, but exceedingly good-natured-looking fellow, and her eldest girl. The child was our medium of communication. How, by motion of hands and fingers and lips, and by gestures, she translated, almost as rapidly as uttered, our words into meanings; and how, in a similar manner, they were replied to by her mother and understood by her—was something so marvellous that I abstain from any attempt to describe what could only be credited by seeing.

"Yes, she remembered me now. She did not know the name nor the rank of the lady I had seen her with. She had been engaged at Florence by a 'milord,' through Signor Andreoli the statuary, to travel with him and 'miladi;' 'miladi' was the veiled personage I had seen. She was not always veiled—only in the studio. She did not know the reason, and had never thought about it. 'Milord' was *un galantuomo*, and fabulously rich. They had crossed the sea; but she did not know it was to England; had never before now heard of a place called London. I was the only artist to whom, during her engagement, she had sat. The dead head? It had not struck her as anything extraordinary; she knew nothing about it but that it was there. She remembered seeing from the window a funeral that left the house soon after her arrival; it had impressed her deeply by its difference in character from a funeral in her own country. Signor Andreoli was dead—he was dying when she left Florence.

Nothing could exceed the kindness with which she had been treated, nor the generosity with which she had been remunerated. 'Miladi' herself had accompanied her back, not to Florence, but to Naples. It was her own wish to return to Naples, as they had made her rich enough to marry Bartolomeo. She had never seen them since."

That was all. Obliged to make use, so far, of Charters, I resolved to do more, and I confided to him the whole affair. This discovery of my beautiful model in "La Principessa" knocked its greatest element of romance out of my story; but it left what remained only the more difficult to analyze into motives and objects. What did it all mean? How we guessed and guessed! How we exasperated ourselves with wild surmisings! knowing perfectly well all the time how utterly useless it all was.

"I tell you what, my fine fellow," said Conway to me, at the same time thrusting all his fingers up through his hair, "it won't do to have any more of this. Instead of being driven frantic, it will be a thousand times better to distract ourselves. I vote for San Carlos this evening; to-morrow we'll have Pinto here. Get upon quite another horse, and send this ten-year old mystery back to Old Nick, who must have been its breeder."

I could do no better than follow Conway's lead. So we went to San Carlo, and next day set to work—as Englishmen usually do—seriously to enjoy ourselves. In a fortnight we went back to Rome. A week later I returned to England, nearly oblivious of my pet mystery, anticipating no further revelations, or—if expectation lurked anywhere out of sight in my mind—certainly not dreaming that I should come upon them where and how I did, nor that they would prove such odd things, as they ultimately turned out to be.

[*To be continued.*]

GOETHE AND FREDERICA.

A poet, in his gentle youth,
With deftest foot and lithest limb,
And seeming grace of maiden-ruth,
With which the Nine had gifted him,
One morning to a cottage came—
Goethe that morn at Sesenheim.

It was the sweetest April-time,
And beey-swarms humm'd thro' the trees,
And Nature's voice, in silver rhyme,
Received fresh cadence from the bees;
And something of the outward cheer
Bespoke the poet's welcome there.

Then, freshly from the fragrant field
Frederica came in rustic dress,
And gleesome in the cot she reeled
With pendent hat and loosened tress;
And Goethe, quick as stars do shoot,
Had caught the twinkle of her foot.

That classic foot, and ankle rare,
So slender in its Naiad-grace;—
But stopping with a modest air—
Confused light broken o'er her face
In little swirls and eddies—she
Acknowledged Goethe graciously!

And Goethe thought he then beheld
In her great eyes the forming mind,
That doth in one sweet being weld
The uncouth passions of our kind.
O love, she walks in strophes—she
Is all embodied melody.

He marked the sweetness of her face,
The simple thought, the modest word,
And motions of a childlike grace,
As flitting as a nesting bird;
And her rich will he felt and saw
As God designed, a poet-law.

There is such music in her words
As winds along with slender streams;
Her laughter, like the song of birds,
Rings thro' the sense of rosy dreams;
And all day long four proud words ring
In her queen-heart—"My king, my king!"

They skirt the borders of the field,
Where brawny bare-arm'd workmen move,
Fronting the sunrays without shield;
Throughout the fragrant morn they rove
To gather flowers about the ridge,
And twine and knot them on the bridge.

They pass where in the even tide,
The limping hare steals to the verge
Of forest shadows spreading wide,
And sombre-suited to the dirge
Of evening winds that seem to fall
Beneath the herdsman's droning call.

They reach an oak—a place of tryst;
And weeping take delicious leave;
The future skies are amethyst,
And who with such bright hopes could grieve?
Oh, maiden! on thy perfect soul
Too soon the waves of scorn shall roll.

P. J. Malone.

HOUSEHOLD NOTES.

I read your handsome and excellent magazine every month, Mr. Editor, and find much in it that even a woman may read with profit; but I am sorry to see that the ladies are so backward about helping to make their special department interesting. Why don't they send you more nice recipes? Why don't they give their "experience" in the kitchen, or the nursery, as the gentlemen do theirs in the cotton field?

"Suppose you set the example," perhaps the editor suggests mentally.

What can I write that will be of any use to anybody? But I suppose that is what they all say; so I will try, with the hope that others will be encouraged by my attempt and give you better help.

You have "Farm and Garden Notes," "Scientific Notes," and notes on almost everything but domestic economy. I will add to the list a few of my "Household Notes." I hope they will not be *protested.* I don't claim all I may give you as new. If it is all true and good is not that enough? Well, to begin with something nice, I will tell you how I make

Sweet Potato Buns.

I boil and wash the potatoes—say two medium sized yams—rub in as much flour as will make a pretty stiff dough; add sugar to the taste, a little nutmeg, and a table spoonful of good yeast. When it has risen sufficiently I work in two table spoonfuls of butter finely cut, and then bake brown on tins. They are to be served hot, and split and buttered as eaten.

Bone-Food and Brain-Food.

I am glad to see your endorsement of unbolted wheat flour, or "Graham flour." I have read somewhere that a French experimenter once fed a number of pigeons on nothing but grains of wheat, from which the hull, or part which makes the bran, had been entirely removed. The result was, they soon died, and their bones were found to be very weak and brittle, and in some cases almost entirely gone. This shows that the bran is the part that feeds the bones. Dr. Hall, in the following slip, which I cut from his *Journal of Health*, says the same thing:

To give power to the brain, strength to the bones, and beauty and durability to the teeth, it amounts to a demonstration, that from the time of weaning, the bread consumed by the child, until the teens are nearly passed, should be made of the whole material of the grain of wheat, either in the shape of wheaten grits or bran, or brown bread.

Who will give us a good recipe for making raised Graham bread? I have tried the patty-breads and found them nice.

Borax for Cockroaches.

Housekeepers who are troubled by cockroaches should try borax. The insect has a peculiar dislike to it, and will never return where it has once been scattered. As borax is perfectly harmless to human beings, it is much to be preferred for this purpose to the poisonous substances commonly used.

I have a plenty more of these notes and scraps in my portfolio, but I will wait and see what you do with these, Mr. Editor, before I give you any more.

MRS. E. M. A.

HEALTH MAXIMS.

The Most Wholesome Bread.

To make the best bread that can be made of wheat, obtain good wheat and grind it without bolting; mix it with cold water until it is as thick as can be well beaten with a spoon; after it is thoroughly beaten down, put it into a large iron pan, composed of many little ones, which must first be made hot; put it then quickly into a hot oven and bake it rapidly as possible.

Corn and Rice as Food.

Indian corn makes excellent nourishment. It contains a large amount of oil, has remarkable fattening qualities, and is likewise remarkable as a heat producer. Rice keeps its consumers fat, but it lacks the elements which feed the muscles and brain.

Mysterious Dispensations.

A child goes out of a hot room with naked arms and legs in pursuit of its daily supply of poisoned candies, and then dies of croup. Is that a mysterious Providence? If a man indulges himself until he gets the gout, and the disease attacks his heart and kills him, is his death a mystery?

What Americans Eat.

A large part of the food of Americans is composed of white flour, sugar and butter. People who try to live upon such stuff gradually starve to death.

Why we are Dyspeptics.

The reason that the American people are such dyspeptics is, that they eat and drink so much, and eat and drink so fast.

Cannot Digest their Dinners.

Half the rich men and women belong to the category of the miserable; they cannot digest their dinners.

RECIPES.

Scalloped Oysters.—Fill a buttered dish with alternate layers of oysters, hard-boiled eggs and grated bread crumbs, with pepper, butter and salt, taking care to have a thick layer of bread crumbs on the top. Bake twenty or thirty minutes in a hot oven.

Sweet Potato Pone.—Peel and grate two medium sized sweet potatoes; pour on it nearly a pint of cold water; add four large spoonfuls of brown sugar and one of butter; season with ginger if you like it; bake in a moderate oven about three hours.

Apple Fritters.—Make a batter not very stiff, with one quart of milk, three eggs, and flour to bring it to a right consistence. Pare and core a dozen large apples, and chop them to about the size of small peas, and mix them well in the batter. Fry them in lard as you would doughnuts. For trimmings, powdered white sugar is best, though good brown sugar will do.

To Remove Stains—Those of grass, grape-juice, and the like—from white garments, dampen the spot, and hold it over the fumes of a lighted sulphur-match.

Liebig's Soup.—Chop lean beef fine as for mince meat. Mix it uniformly with its own weight of cold water, heat it *slowly* up to the boiling-point, and let it boil briskly for one or two minutes. Strain the liquor through coarse linen, add salt and other seasoning. It is said to form the strongest and best soup that can be extracted from meat.

To Cleanse Blankets.—Put two large table spoonfuls of borax and a pint bowl of soft soap into a tub of cold water. When dissolved, put in a pair of blankets, and let them remain over night. Next day rub and drain them out, and rinse thoroughly in two waters, and hang them to dry. Do not wring them.

A Disinfecting Wash.—Milk of lime, (or whitewash,) 12 quarts; carbolic acid, 3 ounces—mixed well together. When a white-wash is not desirable, a colorless wash may be prepared by substituting lime-water.

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OUR CONTRIBUTORS.

No agricultural paper or magazine in the country, North or South, we venture to say, can boast a more *weighty* list of contributors than The Rural Carolinian. Other publications might, perhaps, display a longer array of names, but in practical experience, learning, talent, influence and social position, the following roll is not easily matched, and we feel an allowable pride in having so soon drawn around us such an able corps of co-laborers in the great work of promoting agricultural progress in the South. We make room at this time for only a partial list:

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FARM AND GARDEN CALENDAR FOR JANUARY.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance north or south of this place must make necessary allowances for difference in the seasons.

AGRICULTURAL OPERATIONS.

Breaking up the land for *corn* is now one of the principal operations on the farm. Let it be deeply and thoroughly done, but do not *turn over* the soil too deeply. A subsoil plough, or bull-tongue, should follow the turning plough, where subsoiling is thought desirable. Avoid ploughing when the land is too wet.

See articles on ploughing and subsoiling in back numbers, and especially on corn culture, pp. 138, 478 and 521, Vol. I.

—— *Manure* cannot be too liberally used, provided it be *judiciously applied.* Buy commercial fertilizers if you can, but do not neglect to make all you can at home. The work of preparing it should continue.

—— *Stock* must continue to receive the best attention, if you wish effective work from your horses, mules and oxen, and profitable returns from the rest.

—— *Make close calculations* and do not try to accomplish too much, lest you fail to accomplish anything rightly. Above all, make your arrangements for good provision crops of all kinds. After this, do what you can in cotton.

GARDEN WORK.

—— *Peas* should now be planted, wherever the state of the ground will permit. See last month's work for directions.

—— *Irish Potatoes* may be put in any time during the month, but in this latitude they are liable to come up too soon, and get cut off by frost, if planted the first part of the month. See article in number for December, 1869. The Garnet Chili is highly spoken of here, in the neighborhood of Charleston, as an early potato, but its quality is not the best.

—— *Beets* may be planted here in the low country, (Charleston and southward.) Select ground, if possible, that is sufficiently rich from previous manuring, spade it very deeply, pulverize it well, and sow in rows twelve inches apart and one inch deep.

—— *Onions* for the main crop may be now put in. Have the ground very rich and finely pulverized. Cultivate those planted in previous months, but work them *very shallow*, and avoid earthing them up. The bulb should form mostly above ground.

—— *Turnips, cabbages* and *Kohl Rabi* may be sown during the month, if the weather be not too severe.

—— *Lettuce, radishes* and *spinach* must be sown for a succession. A little loose hay may be thrown over the plants in cold weather.

—— Of *carrots* and *parsnips* you may sow a few for an early crop. Prepare the ground as for beets.

—— *Hot-beds* should be got ready toward the last of this month for forwarding tomatoes, cucumbers, etc. See article on "Garden Crops—What to plant," in Horticultural Department.

—— *Fruit trees* and *grape vines*, if not already planted, must now be put out at once, in order that the roots may have time to get established in their new location before the growing season commences.

—— Dr. Augustus Voelker, of England, during the past year, has reached valuable conclusions as to the application of manure to Irish potatoes. He sums them up thus in *The Journal of the Royal Agricultural Society:*

"1. The greatest increase came from the application to an acre of 400 pounds of mineral superphosphates, 200 of potash salts, and 200 of sulphate of ammonia.

"2. Dung did about as well.

"3. The absence of sulphate of ammonia was attended with a marked falling off, and nitrate of soda cannot replace it.

"4. The compound above named beats Peruvian Guano.

"5. Common salt does no good but harm to potatoes.

"6. The above mixture gave a crop of 12 tons to the acre on light land, and the same unmanured yielded but half,"

The Alderney, or Jersey Cow.—(Engraved expressly for the Rural Carolinian.)

THE

RURAL CAROLINIAN.

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High Farming without Manure.

This is the title of a little work embracing six lectures, by Professor M. George Ville, delivered at the Experimental Farm, at Vincennes, in 1864. It has been attracting considerable attention among leading agriculturists of this country for several years past. As yet we have seen no review or criticism of the system, by way of exposing its fallacies, but it has generally been received with favor, and some seem to be possessed with the idea that this system inaugurates a new era in agriculture, and will supercede all others. Without undertaking a review of the work ourselves, we propose to notice a few points which are manifestly unphilosophical and impracticable, at least so far as this country is concerned.

In order to carry his system into practice, he says:

"The agriculturist will only have to reserve some square plots in a field, to which he will give complete and partial manures of the following composition for the surface of an acre:

	Complete.	Without Nitrogene.	Without Minerals.	Without Potassa.	Without Phosphate.	Without Lime.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Phosphate of Lime...	352	352		352		352
Carbonate of Potassa.	352	352			352	352
Quick Lime.....	132	132		132	132	
Nitrate of Soda.....	488		488	488	488	488

"Suppose we undertake the cultivation of a piece of poor land. We begin by giving it the complete manure, in order to create a sufficient provision of the four agents of fertility. We raise one or two crops of cereals upon this manure; then we continue the culture by giving to the soil, each year, the dominant element of the crop we propose to raise."

This is about his system in a nutshell, but will it bear the touchstone of philosophy? We suppose as far as France is concerned, and the particular soils upon which he experimented, that his inductions may apply; but how of lands already surfeited with lime, as in the cretaceous soils of Lower Georgia and the limestone lands of Virginia and Kentucky? Will it pay to apply lime to these lands? Or how of the felspathic and micaceous soils of Middle Georgia and Carolina? Can we afford to purchase potash as a fertilizer at the present high rates, to apply to soils which have enough for a thousand years cropping? Certainly not. Then the system is a failure upon philosophical grounds.

But the test has long since been made in Hancock County by the writer, and more recently in other sections by other persons. The results seem to warrant the conclusion that it is not lime, potash and soda that we need to keep up the fertility of our soils, but nitrogen, phosphoric acid and humus. Agriculture is not old enough, in this country, to have exhausted from our soils those alkalies and earths, as it seems not to be in France to have exhausted chlorine, sulphur, magnesia and iron. The time may come when these elements may have to be supplied there and the others here. At present we have only to supply nitrogen, soluble phosphoric acid and humus, representing carbon in all assimilable forms, in order to make remunerative crops and improve our lands. M. George Ville, then, is decidedly behind the times, when he expects to instruct the agriculturists of this country in the application of his complete manure; and those who are not better acquainted with our soils and their requirements than to adopt his system, will find, at their own cost, that however well it may be adapted to soils which have been in cultivation for centuries, it will not answer for new lands exhausted only of the first elements of fertility.

But the application of M. George Ville's complete manure would involve an expense that could not be endured by our wealthiest planters. He applies, per acre, 1324 pounds of a fertilizer which costs about $86 paid down at this place. A farmer who has 300 acres to be manured, would have to pay $25,800 in money to procure enough for this small farm, and if he has to haul it as far as many of our farmers, say eight or ten miles, it would take him about six months with a four-horse team to accomplish the result. This shows how impracticable the whole system would be, and how utterly futile to attempt to adopt it in this country. Indeed, it looks unreasonable that such an amount of money could be expended even in Europe, where lands are so valuable, with any prospect of remuneration. Its fallacy becomes ridiculous, when it is known that the bulk of it would be like hauling coals to New Castle, and even more than this in some instances, where the extreme causticity might injure the land, by the rapid decomposition and evolution of the organic matter, which in our Southern soils is so deficient, and yet so important in the production of cotton. For without it even nitro-phosphates fail to remunerate, producing rust and premature exhaustion of the plant.

Several other of his deductions strike us as unphilosophical. For instance

he says: "I do not hesitate to say that I place the nitrates in the first rank among nitrogenous matters useful to vegetation. Next come ammoniacal salts, and a long way after them organic nitrogenous matters, which to act usefully must be previously converted into nitrates or ammoniacal salts."

Our experiments prove just the reverse of this. With an equal quantity of superphosphate, and at about an equal cost, we applied nitrates, salts of ammonia, and nitrogen in organic matter, to contiguous rows of cotton seventy yards long. Of the two best kinds of each, the organic matter, representing nitrogen, averaged 279, or the ammoniacal salts 259, and the nitrates 245. A combination of ammonia and organic matter made 288, while a compound of ammonia and a nitrate made 264. This probably may teach, that in Nature's labaratory, a burning sun will produce very different results (at least much more rapid) in the elimination of fertilizing elements from organic matter, and here possibly begins the first chapter of comparative agricultural chemistry to be developed and written by some future student of this noble science.

E. M. PENDLETON.

Sparta, Ga., December 27th, 1870.

Experiments with Commercial Fertilizers.

Having made and recorded some experiments with commercial fertilizers on cotton during the past year, I am induced for the promotion of agriculture to communicate results, trusting they may prove of sufficient interest to induce examination and publication.

The soil upon which these experiments were conducted is a light greyish surface soil, with coarse yellow clay subsoil; common pine land which has been in cultivation perhaps twenty-five years, and with exception of about 100 pounds Guano to the acre in 1867, without any manuring in ten years. It was in corn last year.

The preparation consisted in running off the rows four feet apart and breaking with turn-plough by the row in March, and reversing beds upon centre furrow, twice run in with long shovel, by running twice with long shovel on each side, and finishing bed with turning plough on the 27th of April. The fertilizers were deposited in the bottom of centre furrow, and the cotton planted with a Huggins' Planter. Selected seed; planted 29th April.

It was cultivated with shovel plough or Gopher, two first ploughings, afterwards with sweeps, breaking middles with turn plough once in June, when threatened with destruction by water and grass. It never suffered for want of work.

Equal values of the different fertilizers were applied, say at the rate of $13.50 per acre. Single rows side by side, one acre long, 52 to the acre, were experimented upon.

FIRST SET OF EXPERIMENTS.

FERTILIZER USED.	YIELD OF SEED COTTON PER ACRE.
Etiwan No. 1	611 pounds.
Carolina Fertilizer	624 "
Navassa Ammoniated Superphosphate	598 "
Wilcox and Gibbs' Manipulated Phœnix Guano	559 "
Baugh's Raw Bone Superphosphate	546 "
Pacific Acid Phosphate and Compound	429 "
Peruvian Guano	598 "
Peruvian Guano and Etiwan No 1*	676 "
Natural soil, same preparation	286 "
Natural soil, subsoiled	325 "

The second set of experiments was upon rows three-quarters of an acre long, same soil and same preparation as first set. Fertilizers applied at first ploughing in Gopher furrow on south-side of cotton rows, and covered with another furrow. Equal quantities were applied, say at the rate of 350 pounds to the acre; values unknown. The same cultivation was given as to first set. The following are the results:

SECOND SET OF EXPERIMENTS.

FERTILIZER USED.	YIELD OF SEED COTTON PER ACRE.
Bradley's Pat. Phosphate	525 pounds.
Berger & Butz Superphosphate	507 "
Busey's Excelsior Guano	525 "
Raw Bone	367 "
Palmetto Acid Phosphate	472 "
Moro Phillips' Superphosphate	542 "
Etiwan No 1	595 "
Po., So., Per., Et., Compound†	630 "
No manure, same preparation	315 "
No manure, subsoil‡	272 "

On another portion of my farm, I left three rows differently treated. The first was manured last year with about 400 pounds Carolina Fertilizer per acre, but had this year no manure at all. The next two rows had no manure last year or this; all planted in cotton last year. The first row yielded at the rate of 400 pounds seed cotton to the acre. The two other rows at the rate of 200 pounds to the acre.

Adjoining these were five acres unmanured for the last ten years. Manured this year at the rate of 600 pounds to the acre of Carolina Fertilizer. The product was 600 pounds seed cotton per acre an increase of 200 per cent., over the unmanured on both sides the piece.

On the other side of the three rows first mentioned were several acres

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*Etiwan No. 1, four parts; Peruvian Guano one part; four-fifths by one-fifth.

†The Po., So., Per., Et. Compound composed as follows: Peruvian Guano, 1 part; Muriate Potash, 1 part; Nitrate Soda, 1½ parts; Etiwan No. 1, 6½ parts.

‡The subsoiled produced less than that otherwise prepared. This resulted from the proximity of the unmanured common preparation row to the one manured with Po., So., Per., Et. Compound, which very materially increased its yield. The subsoiled row should be taken as the standard.

manured both years with the Carolina Fertilizer, at the rate of 300 lbs. per acre each year. The yield this year was about 900 pounds seed cotton per acre, notwithstanding that from this very land, with a most propitious season, I gathered in 1868 scarcely 4 bushels corn to the acre and on several acres, which are now equal to the best, the yield was not more than one peck corn per acre.

On another part of my farm, I applied 500, 600, 800 and 1,000 pounds Carolina Fertilizer to the acre on cotton, half broadcast and half under the seed before planting. The result was, I did not gather as much cotton from the acres manured with 500, 600 and 800 pounds as from those manured with only 200 pounds. The land was old, had never been much manured and was nearly exhausted; nevertheless the cotton grew off splendidly and continued to do well till after the heavy rains in July, when it began to rust or stop growth. Such effects are produced by high manuring on thin lands. I calculated early in July upon at least 1,000 pounds seed cotton to the acre. The yield was 500 pounds. Where 1,000 pounds Fertilizer were applied, the land was fresh and in good heart, and the yield was 1,400 pounds seed cotton.

On yet another portion of my farm, I applied the Fertilizer, 320 pounds to the acre, where I applied last year 300 pounds to the acre with extraordinary result, (I say extraordinary, for the increase was 150 fold); through this I left some unmanured rows. The difference between the rows could not be detected.

From the above experiments and their results, I almost reach some conclusions which may prove of interest to others.

First, That Peruvian Guano, which has been considered the standard for comparison for all commercial fertilizers, fails to produce as much cotton, as a fertilizer claiming to contain no ammonia at all—the Etiwan No. 1.

Second, That neither the Peruvian or the unmixed Superphosphate Etiwan 1 produce so well as a combination of the two, or as a commercial fertilizer, containing both Superphosphate and Ammonia, like the Carolina Fertilizer, which has produced better results for me than any other commercial fertilizer.

Third, That commercial fertilizers as general or special manures may yet be greatly improved, so as to meet the wants of any crop, upon all soils. For instance by the combination of Peruvian Guano, Etiwan No. 1, Potash and Soda, not only was the crop increased considerably over other fertilizers, but what is more important still, there was no rust where this combination was applied, which was on two separate fields, distant apart, and where I had more rust then on any other portion of the farm. These rows maintained their greeness, both bolls and limbs, till frost; while surrounding cotton was dead and black months before. I do not presume that the proportions of the ingredi ents was just what analysis or further experience, may decide to be best; nor do I believe it would be universally applicable; but that some such combination, perhaps improved by the addition of Sulphate of Magnesia, would

prove a manure for the cotton plant on most soils. A kind of special manure. Agricultural Chemistry tells us that potash and magnesia are found in sufficient quantity in clay soils, for the proper development of plants, especially the cotton plant. This may be true, but practically they are not available. Any soil may be permanently improved, as I know of the stiffest red clay, by the application of ashes, where commercial fertilizers and ordinary composts were of but poor, temporary advantage.

Fourth, That the Charleston Fossil Phosphates, properly prepared, are more than equal to the Raw Bone Superphosphates, as instanced in the yield from the Carolina Fertilizer and Baugh's Raw Bone, which is everywhere conceded to be the best and most honestly made of its class.

Fifth, That Peruvian Guano is the best, or most profitable source of ammonia, or nitrogen, for combining with superphosphates, as instanced in the greater productiveness of Peruvian and Etiwan No. 1, over all the commercial fertilizers, the source of whose ammonia is generally fish or meat scrap. I admit this may be owing to the presence of other valuable salts in the Peruvian.

Sixth, That the amount of soluble phosphate in a manure makes a great difference in its value. Instance the different yields of Etiwan No. 1, Pacific Acid Phosphate and Comp., and the Palmetto Acid Phosphate; neither of which latter, I presume, claim near so high a per centage. In other words, I believe that 100 lbs., containing 25 per cent. of soluble phosphate, will produce about the same results, at any rate the first year, as 200 lbs. of a manure containing only 12 to 15 per cent.

Seventh, That possibly fine ground phosphates might prove remunerative to the planter. I presume no sulphuric acid is used in the manipulation of Wilcox & Gibbs' Manipulated; yet, it produces as good results as Baugh's Raw Bone Superphosphate. The main source of its phosphate (the Wilcox & Gibbs') must be the finely divided Phœnix Guano.

Eighth, That on poor soils a moderate application of commercial manures will prove most remunerative. That better soils may be more highly manured with profitable results.

Ninth, That some soils soon get a sufficiency of phosphates; and that others require much more to sufficiently saturate them for their best productiveness.

Tenth, That on some soils good results are obtained for two years from one application of superphosphates. I had an increase of 100 per cent. this year from application of the Carolina last year.

Eleventh, That some very poor soils may be rapidly brought to fair productiveness by the use of superphosphates alone.

Twelfth, That subsoiling barely pays such years as this has proved—so much rain.

Meteorological conditions must have influenced all the results very considerably. We had no rain sufficient to bring up corn or cotton from 10th April to 27th May; consequently, the stand of all late planted cotton was

imperfect. From the last date to the 18th June it rained almost every day. So wet was it that it was almost impossible to plough, even on the hills, for bogging. Notwithstanding this, my Journal says: "1st July—The cotton crop is growing and more advanced than at the same date last year. 2d, 3d, 4th, 5th and 6th July—Cotton in full bloom, but impossible to plough, on account of wet." Indeed, this was the wetest time we had—the rains were almost deluges. I finished ploughing cotton the last week of July. Rust made its appearance about the 1st August, on the most highly manured spots, and extended quite rapidly. ED. B. SMITH, M. D.

Marion, S. C., December 5, 1870.

The Possibilities of Cotton Culture.

Most readers of the agricultural journals have heard of Col. R. G. Lockett's *three bales of cotton to the acre.* There was no new principle involved in the way he produced the crop:—The land was first broken with the Watt and Knight A. B. plough, the large mould board attached, breaking the land about six inches deep—this was done the latter part of January. The land remained in this condition until ready to be planted. It was planted on the 24th of April. The rows were laid off five feet apart with an ordinary scooter plough, following in each furrow with a double wing shovel, sixteen inches long and eleven inches wide, drawn by two mules. In this furrow was distributed about one hundred and fifty bushels of well-rotted horse lot manure, and three hundred pounds of John Merryman and Co.'s ammoniated dissolved bones, per acre. This was then covered with the Watt and Knight A. B. plough, small mould board attached, following in each furrow with a sub-soil plough breaking in all about fifteen inches deep. As soon as the preparation was completed, the seed was planted, putting one bushel per acre with the Dow Law planter.

As soon as the cotton was large enough, it was ploughed with the sweep, cutting twenty-four inches wide, and one-half inch deep, and was at once chopped to a stand, using the No. 2 shovel hoe, leaving one and two, and sometimes three stalks—the width of the hoe apart—and ten thousand stalks per each acre. The cotton was hoed twice and ploughed seven times, using each time the twenty-four inch sweep, and never cutting over one-half inch deep. It was cultivated with twenty-one furrows.

We are not told what the character and condition of the soil was nor the nature of the preceding crop.

That even three bales to the acre comes anywhere near the limits of production for moderately fertile soils, we do not believe, and we understand that it is the opinion of our former fellow-townsman, Mr. James Bancroft, now of Athens, Ga., who has produced results as astounding as those recorded by Col. Lockett, that Middle Georgia lands (not the best in the world by any

means), can be made to produce *five bales to the acre*, and with a handsome profit to the planter.

Mr. Bancroft's system is simply to convert the soil into "tilth," by deep and repeated ploughings with the turn plough, and supply it liberally with such fertilizers as by experiment he has found best suited to the cotton plant to feed upon during its growth and while maturing. The thoroughness of preparation of the soil frees him from a large part of the usual continuous labor during the heat of summer, by pulverizing it at those seasons which will best destroy interfering growth. His summer's work is light, confined almost entirely to surface stirring.

A new system of cotton culture, calculated, in the opinion of its originator, to still further increase the yield, and at the same time make the crop more sure, was introduced last season by Mr. Philip Poulain, of Baltimore, (late of Georgia). Whether it received anywhere a fair trial or not we are not informed, but if not practicable under present circumstances, it is at least suggestive, furnishing hints toward an improved method. It proposes:

1. To secure a full and early bottom crop, acknowledged by farmers to be that which yields the greatest quantity and the first quality of cotton.
2. To economize the use of fertilizers, by so placing the compost and enriched soil within the reach of the plant, as demanded by its nature.
3. To economize labor, by directing it to the particular point maintaining the plant, aud confining its chief demands to preparation in winter and early spring, and the picking season.
4. To increase productiod by prolonging, at least for one month, the season for blooming and maturing the fruit or pod.

These objects are to be attained by means of a certain improved germinating and transplanting cup. The improved cup is the frustrum of a cone, having taper sides, and both ends open. It is simply the ordinary earthen flower-pot, with both ends open and inverted—the large opening being the base and the smaller the top. The larger opening being lowest permits the cup in transplanting to be drawn up over the plant without disturbing or rupturing the roots of the plant by the anhesion of the soil to the sides or walls of the pot.

The cotton plants are to be raised in a hot-bed in the patent pots, so as to have them ready to transplant, and as large as possible for that purpose so soon as frosts are over in the spring. Meanwhile the land is to be laid off in squares or hills, eight feet apart each way, and the hills excavated deeply and widely, and heavily manured. By early transplanting, the bolls would begin to open in June, and in a favorable year produce till November. The excavated soil does not foster grass or weeds, and is to be spread around the outer surface of the excavation or hole. The middles are to be ploughed at leisure.

It is claimed that the saving of cotton seed, and the labor of thinning to a stand, will pay for the cost of a transplanting cup many times over, while the crop will be insured against drought.

This very beautiful theory may not work in practice, but it shows at least a tendency of inventive thought in the right direction. We need and must have new methods better adapted to the changed conditions of labor, and more in accordance with the progress of the age, and we hail with pleasure every step tending toward that end.

Practical Experience in Planting.*

It is not a pleasant task to acknowledge our errors or recount our failures, but when these errors and failures, however disastrous to ourselves as individuals are made known, they may serve as beacons to guide others into safer and better channels.

I shall admit, then, at the outset, that my efforts have not been crowned with that degree of success, which the possession of fair lands and ordinary industry would warrant me in expecting, and when I am forced to say that many of my failures may be charged to the labor I have employed, I am forced to acknowledge for myself, many errors in the management of that labor, great ignorance of my business and especially of my land. The relative fertility or poverty of different fields, and their adaptability to certain crops. The proper amount of drainage they required and the location of the drains, so as to serve the best purpose with the least cost.

I will now give you my experience in the cultivation of our different crops beginning with cotton, which I concede to be our only money crop.

In the successful cultivation of this crop, great skill is required: First, in the best preparation of the soil in planting, to secure an abundant and uniform stand, and in the rapid and careful working of the crop, whereby the grass and weeds are to be subdued, the earth frequently stirred, giving the plants the best advantages of moisture, light and air, so essential to its perfect development. This is what is essential to success, but what is the practice. Let me answer for myself. Stimulated by the high price and unmindful of the defective labor, or rather hoping each year the labor would improve, I have continued to plant the same large crops, necessarily planting much land too poor to bring paying crops and employing much unprofitable labor. If this would not do with cotton at twenty-five cents, what shall we do with cotton at fifteen cents.

The remedy, I think, will be found in cultivating less land and in employing less labor, deminishing our expenses in wages, in mules, and in implements. In better preparation of the soil, better manuring, and better cultivation, to make the diminished, area produce more and better crops than we now get. Very much can be done also by a careful selection of seed. I am convinced myself, that the difference in yield between good and poor seed, other

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* A paper read before the Farmers' and Pomological Club of Society Hill, S. C., Nov 5, 1870, by S. W. Evans, Esq.

things being equal, is at least one-third, and I think I can show you two fields, not very far from this place, where the difference in yield is still greater.

It has always been my habit to plant a sufficiency of corn, and usually I have made enough. Still, it has sometimes happened, under adverse circumstances, and seasons such as the last, I have been compelled to save my cotton at the expense of my corn. I think so much of our chance of success depends upon an abundance of corn, made at home, that its cultivation has been a subject of much thought to me of late. The conclusion I have arrived at is that I plant too thick, and that the seed of the country is worthless. I have examined a great portion of all the corn in the neighborhood and failed to find a good corn—or, in fact, a single pure variety. The remedy for these evils will suggest themselves to each of you.

Deep preparation and shallow cultivation seems to be the accepted mode now everywhere.

My experience teaches me that shallow cultivation will only do where the preparation has been very thorough—such as one ploughing will not give. Then I would say, if you intend to follow this mode plough twice. First break; then bed your land; and then, by planting wide and cultivating only one way, you will find a great saving of labor in the Dickson Sweep.

A good crop of oats will naturally follow a good corn crop. The same degree of fertility of soil, whether natural or artificial, which made the one will produce the other.

Early planting is esssential; but thorough preparation of the soil is all-important. Harvesting this crop, of late years, I have found very tedious and harrassing. To obviate these difficulties I purchased an Excelsior Reaper for the last harvest.

Owing to my ignorance of such machinery I did not succeed in working it to my satisfaction; and it was not until I had broken the sickle that I discovered I had not put the machine together properly. Learning something from this error, when I came later in the season to use it, as a mower, I succeeded to my entire satisfaction. Now I have no hesitation in saying the machine is a success, for, in less than two days, I cut with it, on eight acres of very poor grass, twenty-three large wagon loads—equal to fifteen thousand pounds of good hay. The only question about the machine is, are you or your sons willing to pull off your coats and work it? If you are, buy it; if not, let it alone. It is not a thing to be put in the hands of an unskilful laborer.

I plant wheat only for a family supply, and have never failed. If there is a surplus I find it very useful in paying for extra labor and odd jobs.

Clover succeeded admirably with me the past summer. I cannot now give you much information; but I have great faith in it, and entertain the belief that at no distant day it will be grown successfully upon thousands of acres of the stiff bottoms of our rivers.

I would gladly pass over the subject of labor, but its importance requires I

should give you my experience. I have tried it in every conceivable form, and have arrived only at this conclusion: That it is more easily and more profitably worked in small bodies; and that so far from there being a scarcity, we have more than can be profitably employed upon our poor lands. For one, I would be glad to see the negro seek homes in the richer regions of the West; where, by industry, and economy, and the practice of those virtues it is to be hoped he will yet acquire, he may become a useful citizen—since citizen he is and will be for all time.

In conclusion, let me urge you to plant less cotton and to make at home your corn, bacon, flour and molasses, sufficient for your own use and the demands of your laborers. A surplus of these would go far towards payment of wages, leaving your cotton as the profit of your year's work.

With this condition of things — with fewer wants and more contented minds—we might realize our true condition, and, acknowledging the situation which an all-wise God has ordained as our lot, hope for some return of that prosperity and happiness so long a stranger to our homes and State.

Hints on Corn Growing.

DOES IT PAY TO GROW CORN.

Many farmers at the North have arrived at the conclusion that it does not pay to grow corn, or, in fact any hoed crop, at least in New England. The editor of the *Boston Journal of Chemistry*, himself a farmer, dissents from this opinion and says:

If a farmer in any of the Northern States cannot raise corn at an expense much below its usual market value, it is very certain that he is a poor cultivator of the soil. This can be safely said, even taking into consideration the high prices of labor, fertilizers, etc. Corn *is* a profitable crop for every farmer to raise, if any wisdom, foresight, or industry is manifested in its cultivation. For six years past, we have devoted careful attention to this crop. It has been cultivated several seasons under every disadvantage; with hired labor, the antagonistic influence of wet and cold, and parching droughts to contend with, and yet the cost per bushel averages *less than fifty cents.* It is one of the most certain, the most beautiful, clean and profitable crops which we raise. It must be, indeed, a very unpropitious season when it will not grow, if the soil is put in good condition. What is the reason farmers cannot raise it with profit? It is because they do not select suitable soil, and supply fertilizers in generous quantity.

The editor however, admits, that a crop of only *twenty or thirty bushels to the acre*, does not pay in New England. Does a crop of from *five to ten bushels per acre* pay in South Carolina? We think not; but thirty, fifty, eighty or a hundred bushels pay, and the highest of these figures can be reached on our best lands, to say nothing of such exceptional cases as that of Dr. Parker, where *two hundred bushels* per acre were made.

HILLING CORN A BAD PRACTICE.

Roots love darkness, and yet wish to be as near as possible to the surface; and whether it is the root of an apple tree or the root of a corn-stalk, makes no difference in the working of this law. If we plough deep and cut off the surface roots, the deeper ones are unable to reap any benefit from the atmosphere; and those covered by the soil ploughed over them are in just the same position. This is the "science" of the thing. But better than all this is the experience of those who have tried the matter by careful and intelligent experiments. So far as we know, every such test has resulted in favor of flat culture and against hilling up.

DO NOT COVER CORN TOO DEEP.

Cover the corn carefully, and never more than 1½ to 2 inches deep. If planted deeper than this, it will be longer coming up, and after it comes up it will grow very well until it is three or four inches high, when it will remain stationary for ten days or two weeks. By examining we shall find that the first joint is below the surface of the soil, also that the roots are decaying, while new ones are being thrown out from the joint. These new roots require some ten or fifteen days for their complete formation, and during this time the plant remains stationary as far as growth is concerned. As soon as the new roots are fully formed the old ones will entirely disappear, and the growth will proceed as usual.

PREPARING CORN LAND IN THE FALL.

A Northern farmer has adopted the plan of preparing his corn land in the the fall, even to the placing of the manure in the hills, with the best results. He describes his method as follows:

In the fall I spread about five cords of manure from the barn sheds to the acre, and plough it under. I prefer sward land; then harrow the ground well; then take my horse and plough and furrow it out four feet apart; then I haul on ten or twelve loads of fine, well rotted manure from my barn-yard, and drop it in the hill three and a half feet apart; [this is for small growing northern corn] then cover with a hand hoe, say two inches deep, leaving the furrow between the hills not filled, which aids me very much in the spring in finding the hills. When the time arrives for planting in the spring, whether early or backward, wet or dry, I go on with my hoe, and remove so much of the soil from the top of the hill as is required to have the corn when covered about even with surface of the ground. For two seasons past, I have used Bradley's XL. super-phosphate of lime, at the rate of two hundred and fifty pounds to the acre, with great success. When I use that, I dig a little deeper into the hill, drop into it a spoonful, and cover slightly with earth; then drop the corn on the top.

Common Sense Applied to Farming.

Surely the position of the planting community is such as to require the aid and comfort of all the philosophy within its reach. But the standards of the loftiest schools—the Christian, the Platonic, even the Baconian, are too high, and man too narrow and grovelling to admit of our carrying their

teachings into all the little details of life. While we continue "of the earth, earthy," we must draw some of our philosophy from the "common school" of "common sense."

To illustrate: One has to lift himself to the arena of a grand old Roman to appreciate fully the grand, God-like thought of the noble Lee at Appomattox, "human virtue should ever be equal to human calamity." Man, in his rough and tumble daily struggles, is too much of a pigmy for such armor as that, or even the counsel given by D'Israeli, in one of his earlier works, "learn endurance from the school of hardship." We must come down a little to "Bobby McKain's" school of necessity—"Bobby," as tradition tells us, was something of a wag, and pushed his way, one day, through a crowd to the whipping post, where the sheriff, according to ancient law and custom, was applying stripes to the bare back of a white man convicted of larceny. The convict twisted and squirmed, exclaiming: "Stop, Mr. Sheriff, stop, I cannot stand it—I cannot stand it." "Look here my friend," interrupted Bobby, "you've got to stand it, you're tied." Now, hard as is the condition of Carolina planters, we have to stand it, *for we are tied.* I hope many of us are tied by our love for the old land. Being tied here, then, let us apply the philosophy of common sense to the cultivation of our farms. What are the elements comprised in working a farm now? Simply these: First, the land; second, horse power; third, implements; fourth, manures; fifth, manual labor.

Now, what are we taught by a little reflection and experience as to these points? Why, just this: that four of these five elements are very much under our control, while the fifth is very unreliable. Does the land ever fail in its duty? Does it not always pay back what is bestowed on it? Do manures fail when judiciously applied? Would it not be as reasonable to enquire if good land is better than poor land? Do good tools and implements ever disappoint the user. Would it not be as well to ask if the lever assists to move the weight? Does the horse fail to do his part? Patient, enduring, faithful, suffering friend of man, no! your work is always done, and too often poorly rewarded. Then as these four elements do not fail, and the fifth, manual labor, is unreliable and expensive, the policy should be to increase the use of the four as much as possible, and to diminish the use of and reliance on the fifth.

Twenty acres of land, a full complement to the hand; oats, five acres; corn, seven acres; cotton, eight acres, with good implements, and an application of an average of five dollars of manure to the acre, will produce double the crop that they would without manure, and this at an additional cost of only one hundred dollars, ($100,) while to cultivate an additional twenty acres, the extent necessary to bring the production of unmanured land up to the twenty acres of manured land, would require the expenditure of at least two hundred and fifty dollars, ($250,) while in the latter case you have forty acres of land in the process of destruction; in the former forty acres in process of improvement, twenty by manures and good cultivation, twenty by rest, etc.

Improved implements cost only wear, tear and interest. Horses the same and their food, not amounting to more than half the cost of a man's labor, and doing much more, and more valuable work.

The substitution of a heavy oat crop for corn assists much in this system; horse power, good implements and cotton seed do much in producing this crop, requiring little hand labor. As much provender can be produced on an acre of oats as on an acre of corn, and at one-fourth the labor and expense, besides really improving the fertility of the soil instead of detracting from it. I have now a beautiful prospect of an oat crop (your fine red oats) on a field planted four years in succession in oats, each crop being thus far a great improvement on its predecessor.

Improved cultivators almost dispense with the hoe in the corn crop, and lessen its work in the cotton crop. I spent, during the past season, two hundred and twenty dollars ($220) for improved implements, and am satisfied they will save me at least one thousand dollars in labor per annum, fully and properly used.

I use a work animal, horse, mule or ox, to every hand.

Two horses and two hands will make a heavier crop than one horse and three hands, the usual proportion, the cost at $125 per horse, and $200 per hand, being $650 in the former and $725 in the latter.

The proportion of plough, horses or mules to hands I use is *two* to *three*. At the estimate above two horses and three hands cost $850 per annum; one horse and three hands, $725—which is only $125 less—while the former can cultivate sixty acres as easily as the latter can forty-five, and do the work more efficiently.

HOBKIRK.

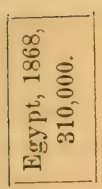
Camden, December, 1870.

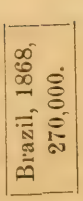
The Cotton Fields and Cotton Bales of the World.

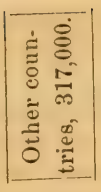
Mr. Rivett-Carnac, in the interesting Report noticed in our last number, gives maps, diagrams and figures showing the comparative extent of cotton cultivation and production in the various cotton growing countries of the world. These diagrams and figures are based on the crop of 1868, and do not present an exact exhibit of the present aspect of the case, but we copy them with slight modifications as sufficiently accurate to give the reader a general idea of the cotton fields of the world. The bales in this estimate are all reduced to the standard of 400 pounds. The necessity for this is ob-

United States, 1868, 2,900,000;
(1870, say 3,800,000.)

India, 1868, 2,300,000.







vious, when we consider that in common parlance, a bale of cotton means anything from one hundred and fifty to five hundred pounds. The average weight of bales imported into Great Britain in 1868, according to the *Economist*, were as follows:

American	443 lbs.
Bombay	380 "
Madras	300 "
Bengal	300 "
Egypt	500 "
Brazil	150 "
Turkey, &c.	380 "
West Indies, &c.	180 "

The consumption of cotton in bales of 400 pounds in 1868, according to Mr. Rivett-Carnac, was as follows:

Great Britain	2,490,000
United States	1,080,000
France	630,000
India	620,000
Germany	420,000
Belgium	250,000
Russia	250,000
Spain	140,000
Italy	100,000
China	130,000

In India there has been a falling off in the production of cotton since the stimulas of the cotton famine, consequent upon the American civil war, has been withdrawn. To what extent this decrease will go, remains to be seen In Brazil there seems to be a tendency to increase the production.

Subsoiling for Cotton.

Mr. W. M. Booker, of Marengo County, Ala., thus narrates his experience in deep ploughing, subsoiling and shallow cultivation for cotton. We quote, with permission, from a private letter to a friend. He says:

In the first place I laid off my rows four and a half feet wide with an eight inch shovel plough as deep as two mules could pull it, followed in the same furrow by a very long Scooter plough as deep as two mules could pull it. I then put in the furrow from fifteen to twenty bushels of sound cotton seed to the acre, two hundred pounds of Gilham's Planters, "A Fertilizer," to the acre, I then listed on that with a two horse turning plough, following in each turning plough furrow with Murfees two horse subsoil plough. After listing the whole field, I ploughed out the middles with two horse turning plough following in each turning plough furrow with the two horse subsoil plough.

I finished bedding up about the 1st of April. I then run a heavy one-horse iron tooth harrow over the beds, then planted the cotton with Aring-

ton's cotton planter. It failed to cover the seeds well, and I run a wooden tooth harrow over the beds behind the planter, which left the beds very near level with the surface. The first working I run around the cotton with a wing Sweep (somewhat like Mr. Dickson's) following with the hoes, choping out and leaving the bunches of cotton as close together as I could. The second working was the same as first except thinning out the bunches to two and three stalks. All the after work was done with the sweeps and hoes running the sweeps as shallow as I could. I never thinned the cotton after the second working.

The cotton grew off finely and up to the 10th of July was at least fifty per cent. better than any other cotton on the plantation. About that time it commenced to "french," or rust, and shed all the leaves. I am satisfied it did not make a single boll after that time.

I have now finished picking and ginning all the cotton from that field and have two hundred and fifty pounds of lint cotton to the acre, which is more than the same piece of land has made in any one year for fifteen years. I had other lands on the plantation which "frenched," or rusted, that did not make over half as much cotton per acre as the fertilized land did. My sweeps cut from twenty-two to twenty-four inches. Hoping the above will be satisfactory, I remain, yours respectfully, W. M. BOOKER.

The experiment would have been more satisfactory in relation to the deep ploughing and subsoiling had it been compared with the same soil similarly fertilized but broken up in the ordinary way.—Ed.

Study the Capacity of your Farm.

Perhaps very few farms will ever be worked up to their highest capacity. Here and there some agricultural prodigy may boast of his "model farm," but after all, we doubt if one farm in ten thousand will ever be so managed as to make *the most possible* of its natural resources. Indeed, we seriously doubt if there is *any limit* to the increase—by skilled and scientific labor—of the productive capacity of American soils. We believe that we may go on *ad infinitum* to almost any extent; and when this belief shall become general, and be followed by a judicious *action*, then we may look for something like a thorough development of our incomparable resources. Then we shall no longer hear the hungry cry for bread, but the swift-winged messengers of commerce, groaning beneath their burden, shall go bounding along the continent, or over the ocean wave, laden with the rich products of American industry. To the speedy attainment of this desirable end we should all constantly labor, as a band of brothers, and let us call in the fostering hand of science to our aid. Most of us work our bodies too much and our minds too little. Working men tell us that labor is antagonistic to mental culture, and with those who toil the *whole* of daylight, the remark is, no doubt, true. But man was never made to follow one *ceaseless* round of rugged toil. Time must be allowed to develop the man—the mind—as well as the mere brute. Perhaps we till too many acres; or perhaps that our labor is wrongly applied; or it may be that we permit one part of our labor to eat up the profits of

another part. At any rate, if most of us are not falling behind, we are making little perceptible progress. Something evidently is going wrong. There's a screw loose somewhere. We must arouse and go to thinking; and not mere *thinking* only, but *right* thinking. Good, sound, judicious, common-sense thinking. And after having thought rightly we must *act*. Perhaps most of us had better *concentrate;* combine all our efforts of mind and muscle on a small area, and study carefully the *capacity* of that. Perhaps if we bring *more* mind to act upon *less* matter we may thereby attain *larger* results at less *bodily* effort. Thus more time would be left us for attending to those things that lend such a charm to social and domestic life—conversation, books, music, rest, recreation, etc.; and chief of all, for educating the heart for a higher and holier state of existence.

Now, then, at the close of another campaign in the hard-fought battle for bread, let us pause awhile to take breath, and begin in earnest to study the capacity of our farms, learn what our soils are capable of producing, ascertain what unused material of plant food we have that may be turned into dollars and cents, or things of beauty, through the living laboratory of plants. Is there a pond or stream that may be stocked with fish, or set with willow, cooper's flag, or other useful aquatic plants. Is there a rich deposit of forest mould, or plants useful in medicine and dyeing, marls, or limestones; or are there savannas or meadows fit for stock at present undeveloped. Learn at once what your farm *is*, and what it is *not* capable of. Take a map of your farm, laid off into sections, as it may be naturally divided by fields or forests or running streams. Charge each section with its own expenses, and make each section yield you *more than expenses*. This is what we mean by studying the capacity of the farm. It is the first in a series of steps along the road: How to make the farm pay. The next is study the soils; third, home-made manures; fourth, keep farm accounts. B. W. JONES.

November 29th, 1870.

The Opium Poppy and its Culture.

A writer in *La Semaine Agricole* thinks that poppy culture can be made profitable in this country, and cites the fact that the price of opium is at present from $19 to $20 a pound. It is just the occupation, he adds, for light-fingered and deft female hands, combining the pleasures of out-door employment with the satisfaction of reaping substantial benefits in the way of pecuniary reward. The details of cultivation are thus set forth in the article alluded to:

The ground should be rich, mellow, level, and prepared as for the cultivation of onions. Make with the finger, or a stick, two little furrows one foot apart, then leave a space of eighteen inches for an alley; then make two furrows more, then another path, and so on.

The seed should be that of the opium poppy (*Papaver somniferum,*) of which there are two varieties—the one white, the other black. The white

is preferable for opium, though the black is cultivated when the plant is raised for the purpose of expressing oil from the seed.

The seed is so fine that it should be lightly covered. Sow it carefully, covering it at the most only the eighth part of an inch. Leave six inches space between the plants; keep them free from weeds, and hoe or stir the soil around them up to the time of flowering.

Immediately after the fall of the petals begin to gather the opium, which is that milky juice that the capsule has secreted for the nutrition of the plant, gathered and dried. This is secured by the scarification of the capsules at the proper time. The narcotic property of the milk begins to develop itself only at the period of flowering.

When the petals have fallen, seize the capsule with the left hand; bend it down, and then with the right hand apply a sharp pen-knife to the largest circumference of the head and then let it up again; in straightening itself it will have received the circular incision. If the heads are small, or even of a middling size, two incisions may be made, but they should not penetrate into the body of the capsules. The milky juice will begin to run immediately, and you must collect it the next day about sunrise. This may be done with the back of your knife, and the opium placed in a glass vase. If it is not dry enough to make a cake, expose it to the air, sheltered from the sun and any humidity.

Crop Estimates for the year 1870.

The monthly Report of the Department of Agriculture for December, is replete with instructive facts and figures, carefully deduced from the voluminous crop returns of the Department. We condense from it a few estimates of the leading crops for the past season:

THE CORN CROP IS LARGE.

In spite of drouth in some portions of the country and excessive rains in others, the corn crop of the United States for 1870, is undoubtedly, in proportion to population, and probably in proportion to acreage, the largest since 1859. From a preliminary calculation, upon local returns from 749 counties, the total product of this year is made to exceed 1,100,000,000. This would give about 28 bushels per acre this year, upon the assumed acreage, (39,000,000 acres) against 23½ bushels upon a little more than 37,000,000 acres last year. Contrary to the general belief, most of the Southern States have made a large relative advance; Tennessee, 23; South Carolina, 27 per cent.; Georgia, 22; Louisiana, 20; Alabama, 17. Mississippi, Texas, and other cotton States have made a small increase.

COTTON ESTIMATES IN DETAIL.

The total aggregate result, as figured from returns to December 1st, makes an estimate of 3,800,000 commercial bales, 1,767,000,000 pounds, or eighty-two per cent. of the crop of 1859, which was 2,154,820,800 pounds. The following statement presents the estimate in detail, including the percentage of increase over the previous crop, and the yield per acre, with the number of acres cultivated in each State.

States.	No. of acres.	No. of bales.	Product compared with 1869, (per cent.)	Yield per acre.
North Carolina	451,714	170,000	118	175
South Carolina	601,764	220,000	124	170
Georgia	1,330,491	495,000	122	173
Florida	140,909	50,000	126	165
Alabama	1,437,272	510,000	112	165
Mississippi	1,644,512	725,000	110	205
Louisiana	920,700	495,000	115	250
Texas	900,937	465,000	132	240
Arkansas	711,734	375,000	124	245
Tennessee	526,184	215,000	114	190
Other States	218,823	80,000		170

SUGAR CULTURE INCREASING.

The increase in cane over last year is estimated at thirty per cent. in Louisiana, a similar rate is returned for Texas, and some advance has been made in Georgia and Florida. So much cane is annually used as plant cane in extending the acreage, that the product of sugar and molasses does not represent the real increase in cane growing. Cane is found very profitable in Southern Georgia for the manufacture of sirup exclusively. Its culture is rapidly extending in Texas, and seems destined to be a product of much importance there.

In the country west of Galveston Bay, where its culture has been commenced, the slightest frost had not occurred; on the 11th of November the lowest range of the thermometer being 49°.

THE SWEET POTATO CROP.

The sweet potato crop has been a large one, nearly every State showing more than an average yield. The quality was uniformly superior, except in Florida, Louisiana, and California.

TOBACCO SMOKERS REJOICE!

The tobacco crop is comparatively large; the increase upon the crop of 1869 being 18 per cent. in Virginia, 22 in North Carolina, 20 in South Carolina, 23 in Georgia, 15 in Tennessee, 20 in Kentucky, 6 in Missouri, 6 in Illinois. Kentucky, Virginia, Tennesse, North Carolina, and Missouri produce the bulk of the crop.

IRISH POTATOES AND OTHER CROPS.

The production of Irish potatoes for the year is little more than four-fifths of the preceding, and the aggregate estimate will not vary much from the total number of bushels in 1859, 111,000,000, which will afford to each inhabtant four-fifths of the supply of that year.

Of Sorghum, the returns indicate a larger product than that of last year. The States showing an increase are South Carolina, Georgia, Texas, Arkansas, Tennessee, and all of the Western States. Little is grown in the Atlantic States north of Virginia.

Full returns of the Castor-bean crop have not been received. The culture enjoys much favor in many localities in the South and West, and is yearly introduced into new fields.

The hay crop is less in quantity than that of 1869 by about 15 per cent. The estimate will go above 20,000,000 of tons, which is little more than the product of 1859.

The present has been a fruitful year for orchards and vineyards in the Eastern, Middle and Western States, but less productive in the South, and in California and Oregon, as to apples and pears.

Accounts of fall-sown wheat and rye are generally favorable. Fields are green and promising; in some, too great luxuriance appears. Many reports of increased acreage are received from different parts of the country; a few accounts of decreased acreage are received.

Small Sugar Farms Will Pay.

It has hitherto been the popular belief that sugar planting could be profitably carried on only on large plantations and with a heavy capital. This may be to a certain extent true in portions of Louisana and Texas upon their broad savannas, with a scarcity of timber and want of water, but in Florida and portions of Georgia, and perhaps we might add South Carolina, it is quite different. The following remarks from the *Florida Land Register*, are suggestive and deserve the careful consideration of planters living in regions to which they will apply:

There is no crop cultivated as a staple within the boundaries of the United States, that promises so large a remuneration for the labor invested, as sugar cane. The boundaries within which it can be grown are limited so far as our territory is concerned, its growth within its latitude sure, its cultivation easy, its profits at present very great.

Without attempting in the least to excite speculation in this matter, we may say, its yield, under fair cultivation, is enormous. No exertion of labor has paid so well since the placer digging of California. No crop is more free from insect enemies, and from the length to the breadth of Florida it is free from any injurious influence of frost (its great enemy in Louisiana and Texas) as it is in Cuba or Mauritius. It grows most luxuriantly in the rich hammock lands, and will grow admirably in all good pine lands throughout the State. It is profitable in patches of half an acre, more so in fields of five to ten acres, and would be immensely so in plantations of from fifty to one hundred acres.

It requires no more capital to make twenty barrels of cane syrup than it does to make the same quantity of maple syrup. No great sugar houses are needed, no complicated machinery, no overseers, no astonishing amount of science. An apparatus that will cost you altogether, from $250 to $500, is all that is necessary to realize from $100 to $300 per acre, from your year's labor.

You may, if you choose, leave all the grinding and making to some one who has the machinery and sell your cane for seed. It will be in demand for years to come. We are within bounds when we say that there is not a section of land in western, middle, or eastern Florida that does not furnish from

eighty to one hundred and twenty and one hundred and sixty acres that may not be made abundantly remunerative in the cultivation of sugar cane. There is wood to fence and build, muck and ashes for fertilizers, excellent water to drink, cheaper transportation than any Western State affords. A word or two as to its cultivation. The stalk is planted, not the seed, generally in drills, from six to twelve feet apart, according to the fancy of the planter, sometimes the stalk is cut into small pieces and planted in hills and cultivated both ways; this is all a matter of opinion, depending upon the quality of soil, etc., and the way of doing it is as various as the inclination or experience of the planter may direct; after that the cultivation is the same as the cultivation of corn. When the cane is ripe the leaves are scraped down with a knife, the stalk cut up and hauled to the mill, ground, and the juice boiled to a proper consistency, as you would boil sap or sorghum juice. There is no more skill or knowledge required in its manufacture than there is in conducting successfully the business of farming at the North.

Prof. Hilgard on Composts.

From a lecture delivered before the Marshall County (Miss.) Industrial Association, about a year ago, by Prof. Eugene W. Hilgard, we make the following extract, commending it to the thoughtful attention of our readers:

No wonder that, as usually carried on, the preparation of a "sufficient" amount of compost manure should seem an impossible thing. But it is wonderful how, if we make it an *object*, the materials accumulate on our hands. Only stop the leaks which long habit of neglect has accustomed us to overlook. Do not let the rains wash away the droppings from the trampled surface of your cow pen, but remove them regularly to the compost pile, properly made up and sheltered from leaching rains. Do not feed your cattle with the products of your field, and then let them carry their droppings to the woods, for the sake of a few buds they may pick in winter. On the contrary, if you have woods range, be sure to pen all the cattle at night even in summer; for you will thus be enabled to concentrate on your fields some of the fertility of the woods soil. Make a point of saving all kinds of offal for the pile, and before using your compost, let it be so thoroughly decayed that you can use it like guano, by the spoonful in the hill. It will then, also, have lost much of its weight and bulk, and cost less in hauling.

I cannot omit, at this point, to call your most serious attention to the main leak, that through which the wasted fertility of the old continent has been swept into the ocean, never to return. All the products of our fields, excepting a portion of the feed crops, ultimately go to serve as food or raiment to man. Hence man's excrements, rags, paper and bone, must and do contain the ingredients withdrawn from our soils; and were we faithfully to return all these things, in the proper form and in the right place, we should need no guano islands to eke out the deficiency in the return made in the offal of crops and manure of cattle. The Chinese and Japanese do this to the letter; and their crops rarely fail; their soils seem to be "fresh" all

the time. Why cannot we, with all our boasted enlightenment, do as much?

Habit, prejudice, ignorance of the true principles of agriculture, are all that can be alleged in defence of the prenicious systems which, one after the other, have laid waste the most fertile regions of the old world, and now threaten us with a similar fate. The venerable fallacy of cattle raising for the sake of manure, which merely results in the transfer of the fertility of the feed fields to the grain fields, and the ultimate exhaustion of both, is perhaps too well demolished by the experience of Europe to offer us any attractions.

A Cheap and Good Fertilizer.

A correspondent of the Selma (Ala.) *Argus* gives the following directions for making a compost, which he asserts "is worth as much as the same amount of cotton seed, and the cheapest and best fertilizer that can be made."

1. Build a "four square" pen, about six feet high.
2. In the bottom put a layer six inches deep of muck, or top soil from fence corners or woods
3. On this layer of soil, put two inches of cotton seed or stable manure.
4. If to be had, put on this one inch of ashes.
5. Having previously dissolved a bushel of salt in about three barrels of water, with this salt water slake one barrel of quick lime, and with this salt and lime wet the layers which have been put down.
6. Repeat the courses in order, viz: six inches of muck, two inches of seed or manure, one inch of ashes if at hand, and salt and lime water. After the pile is sufficiently high, top with eight inches of muck or top soil, and, if practicable, shelter the pen.

When ready to apply take down one side or more of the pen, and, with a sharp grubbing hoe, shove down the heap from top to bottom, so as to cut the materials fine and mix the layers.

The Parsnip in Southern Gardens.

The Turnip Parsnip.

We have seen fine parsnips, of the Sugar, or Hollow Crowned variety, grown in the South, but the dry sandy soils, which so generally prevail here, are not well adapted to its growth; and unless especial pains be taken to produce artificially conditions more suitable to it, the crop is generally at least a partial failure. A rich, moist, peaty soil, or one rich in humus, is what the parsnip requires for the best results, but on a deeply dug, rich loam they may do well, in good seasons. Where the most favorable conditions of soil and preparation cannot be had, the best variety to sow is the Short French or Turnip Parsnip. This grows quickly, and will often make a good crop where the longer growing and later kinds would fail altogether. The parsnip is a most excellent vegetable, and it will pay to take some extra pains to grow it. Its cultivation is the same as that of the beet.

Department of Horticulture and Rural Art.

Hints on Flower Gardening.

*The Double Zinnia.**

It is not our purpose here to instruct the experienced florist or gardener, but to be of service to the novice, by means of a few practical suggestions.

The first mistake the inexperienced lover of flowers is likely to make in the outset, is in buying seeds of many plants that are too tender or difficult to grow for any but skilful florists to venture upon. The catalogues of Bliss, Drere, Vick, Allen and others, abound in attractive pictures of flowers that it would be so delightful to have, that one hardly knows what can be omitted from the list. You will begin, no doubt, with *Abronia umbellata;* a beautiful trailer which we blame no one for desiring, but, ten to one, you will not make a single seed germinate—we are supposing you to lack experience, of course,—and you will, perhaps, blame the honest seedsman for selling you bad seeds. This is but a single instance, but it illustrates a large class of cases. We would advise the beginner in flower growing, then, to be content at first with a comparatively few sorts that are sure and easy to grow, adding others by degrees as he gets experience. Do not despise asters, marigolds, balsams, stocks, zinnias, petunias, verbenas, phlox, pinks, hollyhocks, amaranths, four-o'clocks, (marvel of Peru,) sweet peas, nasturtions, morning glories and the like, because they are common. Get the best varieties of each and you will not lack bloom and beauty. With a very moderate exercise of care and common sense, anybody can grow them.

Another error, one is very liable to fall into, is in getting plants unsuited

* Copied by permission from the Catalogue of B. K. Bliss & Son.

to the place and use for which they are wanted. If you have little room and want to make good show of bloom in small beds, verbenas, petunias, pinks and phlox will suit you. The zinnia, the French marigold, and the marvel of Peru, would be too large and tall. These and the datura should go into the back ground, in borders, or in the centre of larger beds, where they are very effective. If you wish to cover a fence or a trellis with any annual climber, the morning glory and the hyacinth bean, are sure and strong growers. The thunbergia is a little more difficult to get started, but repays some trouble. As a drapery for small trees, the balsam apple is fine. Where larger trees or out buildings are to be covered, the bonnet gourd is just the thing. If you desire to produce a certain effect in color, you must choose accordingly. You can get shades of red in pinks, petunias, phlox, portulacas, and zinnias. In larkspurs, forget-me-not and *ageratum Mexicanum*, you may get blue. For yellow—marigolds, zinnias, portulacas and drawf nasturtion will serve. White may be had in sweet alyssum, sweet peas, phlox and stocks. For fragrance, sweet peas, sweet alyssum, pinks, carnations and mignonette may be selected.

Having got your seeds, and of suitable kinds, and having your ground manured and prepared, you must use a little judgment in sowing them. Some seeds, it is true, will come up and grow in spite of everything, but in most cases, certain conditions must be observed. The soil, for instance, must be in the right state of tilth, moisture and warmth. If too cold and wet, the seeds will rot; if too dry, they will not germinate; if it be stiff and clayey, and rain be followed by dry weather, it will bake, and the tender sprouts will not be able to break through the crust. Seeds are often planted too deep. Very small seeds should be scattered on the surface and a little fine earth be sifted or sprinkled over them; then, if the weather be dry, they must be watered. Larger seeds must be buried deeper in proportion to their size.

These are but few of the many suggestions that might be thrown out in connection with flower growing, but enough has been said for one lesson, and more perhaps than the reader will take the trouble to remember.

Experience with Turnips.

In consequence of the great drought, and my inability to get ready earlier, I could not make my earliest sowings of turnips until the 6th August, when I sowed on beds highly manured with stable manure and superphosphate, well forked in, the Early Redtop, (or Early Dutch of former times,) Yellow Globe, and Yellow Aberdeen. As it was rather too dry, the stand of each kind was a very bad one, but the plants that succeeded grew very satisfactorily, the Yellow Globe and Yellow Aberdeen coming in in succession, just after the Early Redtop, and attaining to quite respectable sizes. I have one Yellow Globe now measuring 24 inches in circumference Although all these turnips were grown on highly manured land, and quickly attained good size,

yet they all proved rather more bitter, when cooked, than suited the taste of the family.

We next had rains on the 12th or 13th of September, and on the 13th I sowed the White French and Sweet German turnip seeds from the RURAL CAROLINIAN office, along with several varieties of the Swede or Ruta Baga. Being too busy, I could not thin out these until comparatively late, although they came up quite too thickly to thrive, but as soon as I did so, and even before, the White French began to form eatable sized bulbs, while even now the Sweet German is rarely, if ever, to be found larger than a finger; and in one case, one side of a five-feet bed is sown with Sweet German, and the other with White French. I thinned out the Sweet German the first by several days, and yet the White French are very far larger, and have for some little time past been of a size fit for eating, while the Sweet German can only be cooked as greens.

I am so much pleased with this White French turnip, that I would be very glad to learn its true specific name, in order that I may hereafter be able to depend upon getting the genuine seed. It has proved of very rapid growth, and what is still better, proves to be entirely free from all bitterness, either in the root or top, whether raw or cooked, and is very palatable eaten raw, being much milder than any variety of radish. From whom were these seeds procured?

I find quite a difference in the different seed catalogues. Messrs. J. M. Thorburn & Co., in their catalogue, offer the "German Teltow" turnip at $1 50 per lb., and White French at 75c. Messrs. Washburn & Co., of Boston, offer the White French or Sweet German as one and the same at 75c. to $1, and James J. H. Gregory, of Marblehead, Mass., offers the "Sweet German" as "Large White Sweet Excellent," and "Large White French" as the "Standard *White Ruta Baga*." The White French that I have is a rough-leaved turnip, with a very white root, generally larger below ground than above, and growing about equally above and below ground. As it is yet early in the season, I cannot tell what size the roots may attain, but they promise to be as large as some that were thinned out early; already measure ten inches round above ground. Is this the "*Navet des Vertus*" *of the French?* What is the true European name of the "Sweet German?" Is it the Teltow, or "White Ruta Baga," or "Hanover?" What is the difference between the old "Hanover" and the modern white Ruta Baga? In conclusion: If I were confined to one variety of turnip, I would select the White French that I have here; if to two, I would add the Waite's Eclipse; and if to three, then add some good kind of Ruta Baga. I think that this White French may prove as early as the Early Flat Dutch or Redtop, and if so, is far preferable.

ROBERT CHISOLM.

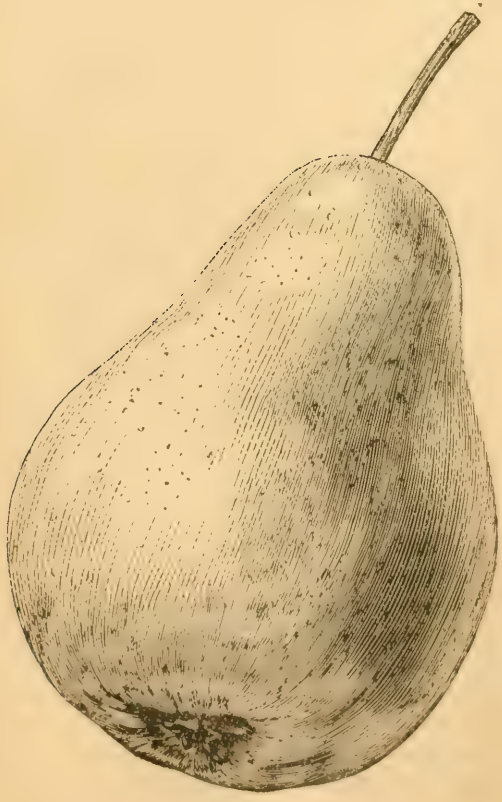
December, 1870.

[Our correspondent's experience is suggestive, but not in all respects conclusive. He can hardly say too much in praise of the so-called "White French," a most admirable turnip for our climate, but he has failed to appreciate the Sweet German at its true value. Could he see and taste some of the latter now growing in our garden, he would, we are sure, place it among the first to be chosen. Our "White French," for the fall crop, were planted very early; and, making a rapid growth, came into use while the weather was still hot, and, like all other kinds grown at the same time, were more or less bitter; we do not, on that account, however, doubt its fine qualities.

The Sweet German is not an early turnip, nor a very rapid grower, but in quality has no superior within our knowledge.

There is some confusion in the catalogues, and more, perhaps, among cultivators, in regard to both the White French and the Sweet German turnips. These, we think, are the facts in the case: The variety we are planting here as "White French" is the *Navet de Clairfontaine* of Vilmorin, and known in England and at the North, by the few who have grown it, as Long White Maltese. The true White French is a white Ruta Baga, and has been grown in this country, to our certain knowledge, for forty years. The seed we sent to Mr. Chisolm was imported from France by our friend and correspondent, Dr. A. B. Rose, of this city. The Sweet German has no synonym, so far as we know, and is quite different from the White French (Ruta Baga) with which some seedsmen seem to confound it. The Teltow, or small Berlin, is a delicate little turnip of a peculiar flavor, and growing no larger than a good-sized radish. We have, so far, had but poor success with it here.—Ed.

The Reading Pear.



This pear has been known for eighty years past in Oley township, Berks Co., Penn., where it is now extensively grown. Tree vigorous, and a remarkably fine bearer. Fruit large, elongated, obtuse pyriform, angular and ribbed. Skin yellow, thickly dotted with brown and gray dots, and sprinkled with russet. Stalk long, curved, enlarged and ribbed at its insertion, generally in a depression. Calyx open; segments strong, in an exceedingly shallow basin. Flesh whitish, granular, melting, with a brisk, vinous flavor. Season, January to March. It deserves a trial elsewhere, and may, perhaps, take the place of some variety better known, but of less merit.

Variegated Antirrhinum.--Silver Bell.

This is a great acquisition to our variegated plants, being (unlike most variegations) of robust and healthy growth, leaves glossy green, margined on each edge with white, occasionally tinted with pink; making a compact bushy plant when in bloom, of from eighteen inches to two feet in height; flowers in dense spikes beautifully marked with crimson and white. The plant originated with Peter Henderson, a few years ago, among a lot of seedlings, the seed of which he imported from Germany.

On Apples Spotting, No. V.—(Concluded.)

The June apples, and those ripening early in the season, never spot, even on old trees. The cause seems to be, that the fruit comes to maturity during the rapid flow of the sap. The leaves are large, of a deep green color, and retain their vigor long after the crop is gathered, still elaborating sufficient sap to keep the tree in vigor through the season.

Those ripening later will mature their fruit on young trees, making a rapid growth, before the food becomes exhausted. The leaf then retains its rich green appearance; but so soon as the orchard has borne one or two heavy crops the apples spot, mostly caused by premature maturity of the leaf and fruit. Many of these apples would mature their fruit north of us, for some years longer; and even here, if kept under high culture on soil well drained.

On all of our gravelly lands, no matter how far South, apples mature so perfectly that they can be kept all winter. This evidently is owing to those lands being naturally drained. On all our thin sandy lands, with a tenacious clay subsoil, stagnant water has ruined more trees than starvation.

We have the authority of the "books" for digging large, deep holes, throwing the clay to one side, and filling up with a rich surface soil or compost. In this we plant our trees. The water running into it, as a seep-well, is effectually stopped by the sides and bottom of clay, and there sours and stagnates. The fact is, they ever after have a soil sour with stagnant water. Instead of so planting, we should cause the water to pass from the trees, until it can find its way out of the orchard. If so prepared, and Southern seedlings are planted, requiring the whole of our long seasons to mature both fruit and

leaves, then we can, by proper food and culture, expect to grow again apples which will keep all winter, no matter how old the trees may be.

Not wishing to occupy too much of the valuable space of THE RURAL CAROLINIAN, I will dismiss this interesting subject, with the remark that it deserves more light than I have been able to throw on it.

There are some other points in the physiology of trees deserving further investigation; to these I expect to devote my attention during the coming season, from which I hope more light will be thrown on apples spotting.

W. B. WILKES.

Aberdeen, Miss., December 29th, 1870.

[We consider the series of articles here brought to a close, very valuable to the fruit grower, and, in behalf of our readers, as well as in our own behalf, tender hearty thanks to the writer. We hope Mr. Wilkes will continue his valuable contributions on fruit culture and vegetable physiology, on which topics no one is better qualified to write instructively.—ED.]

Bastian's Perfection Beets.

Bastian's Extra Early Red Turnip Beet.—This variety is truly an acquisition. Scarcely any early crop can be made more profitable for market than a crop of early beets. Extra early beets, of which the *Bassano* is the type, are all more or less inclined to boil white (a great objection); Mr. Bastian, (one of the most successful of market gardeners,) has, by careful selec-

tion and crossing for a number of years, succeeded in producing a beet combining with all the earliness of the Bassano, a beautiful blood-red color when boiled. In shape it is also perfect.

Bastian's Half Long Blood.—This variety is also valuable—following directly after the above. In color, shape, and size it is all that can be desired in a beet, and is equally good for an early or late crop. The above illustration is from *Dreer's Garden Calendar* for 1871.

Plans for Flower-Beds.

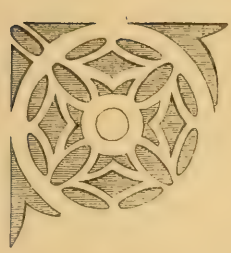


Fig. 1.

We have among us too much Dutch gardening, with its "rectangular formality" and its stiff unnatural looking trees and shrubs. It is certainly an expensive kind of adornment, if adornment it be, and to our eye it is ugly. We do not speak against art. We believe in it, and love it, but let it be that kind of art which coöperates with Nature instead of contravening all her laws. Here are some plans which illustrate imperfectly what may be called the natural style of ornamental gardening. We copy them from an old volume of the *Horticulturist*, with the accompanying remarks :

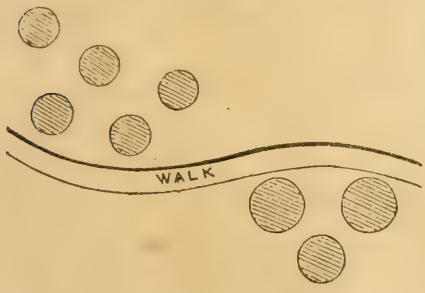


Fig. 2.

Circle groups in small plots of ground where little labor, and that of a common laborer, is expected to be given, are pleasingly satisfactory, and from their simplicity can always be kept in form. Fig. 3 shows an arrangement of circles that, with the list of plants accompanying, which are always easily and cheaply obtainable, presents during the whole of summer a succession, or rather constancy of flowers most effective and satisfactory, and may be used on one corner of a lawn, or as a regular flower garden, where the grounds are less extensive.

1. Salvia *splendens*—scarlet.
2. Lantana *rosea*—rose-colored.
3. Lantana *delicata*—white.
4. Heliotropium—of varieties, all shades of blue.
6. Trailing Lantana.
7. Cupheas.
8. In the centre of this bed, plant a fuchsia, and surround it with a quantity of Phlox Drummondii.
9. In the centre of this bed, plant a heliotrope, and surround it with, first, a circle of double petunias, then with dark purple and maroon-colored flowering verbenas, encircling the whole with white-flowering verbenas.
10. Plant the centre with a circle of, say five plants of scarlet-flowering geraniums, one named Gen. Grant being among, if not the best; then sur-

round these with bright scarlet verbenas, and these again with blush and peach-colored flowering verbenas.

11. As every one loves roses, let us give this circle to that flower, by planting all of the tea-scented family, because they flower continuously. In the centre, then, put Caroline, and eighteen inches from her, in a circle, we put Compte de Paris, Eugene Desgasches, Goubault, Souvenir, d'un Ami, and Bougere; then for outer circle, dividing the remaining space, we use Adam, Devoniensis, Gloire de Dijon, Moire, Lady Warrenden, and Sombreuil.

12. In the centre, we will use the old rose-scented geranium, because its foliage is so desirable in a boquet, and surround it first with Tom Thumb geraniums, or, if the plot is a little shaded from the mid-day sun, with fuchsias, and then again with verbenas of spotted and variegated flowers.

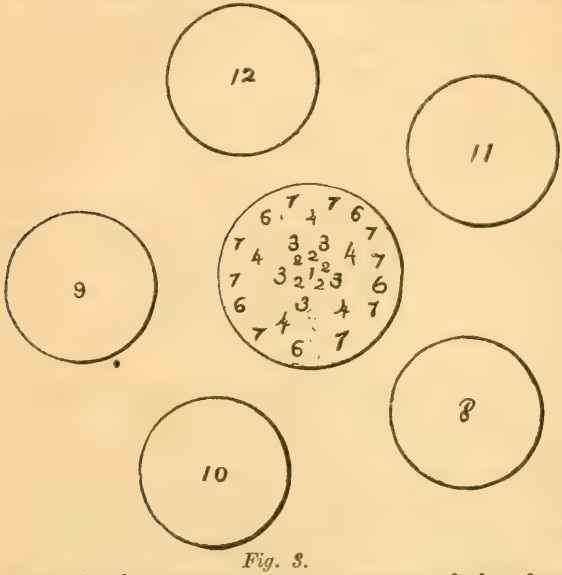


Fig. 3.

Next to this simple form of circles, in what is termed the natural style, come fancy forms, embracing art in their designs, and the use of which, unless managed with skill, is more apt to produce a bad rather than a good effect. Fancy-formed beds of flowers should never be placed out upon a lawn, because such placing breaks up the repose and sacrifices breadth, thus injuring rather than adorning. They may be occasionally introduced to break the continuity of a line of shrubs, their brilliancy of flower and artistic form serving as a relief against the more sober tone. They may also be judicously placed in the curves or on corners of the footpaths, as in figure 2, and especially when near the house.

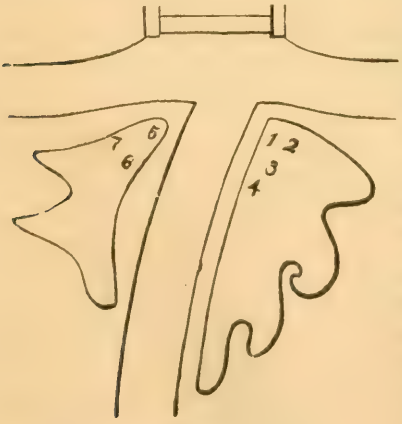


Fig. 4.

Fig. 4 gives position of the steps to a house, the starting of the paths and two beds, with some of the plants now growing in them, and which have been regarded as quite effective and satisfactory for some years.

No. 1 is a mahonia aquifolia; 2 is African tamarisk; 3 is clethra alnifolia; 4 is spirea prunifolia flore pleno, and the remainder of this bed is filled in summer with salvias, lantanas, and heliotropes. No. 5 is a tree peonia; 6 is a calycanthus florida, or sweet-scented shrub; 7 is spirea callosa, and 8 is colutea vel Pocockii, the balance of the bed in summer being filled with geraniums, cannas, and other broad foliage and flowering plants. The result is blooms in early spring, and continued

till late frosts, and nearly all distinct and showy.

As a guide to the novice, we give here representations of some fancy form (Fig. 5) that we have found effective, repeating, however, our previous remark that their adoption in any place all depends upon the styles of architecture, and of the tree planting, breadth, evenness, or inequality of lawn, for the production of pleasing results in their use.

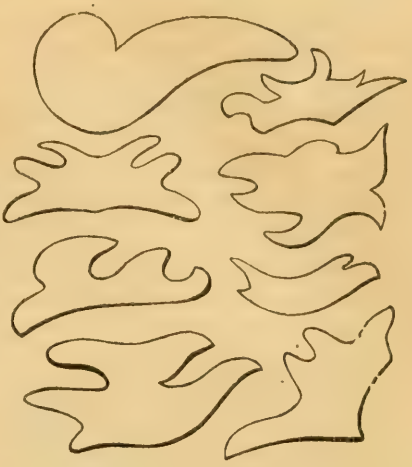


Fig. 5.

Fig. 1, of a symetrical flower-garden, taken from Loudon, we have seen worked up with satisfactory effect.

The centre was occupied by a fountain of water, and each bed planted with a separate variety of plants, the colors and heights so arranged, that they graded and shaded from a centre toward the fountain, and also toward the outer walk. It was originally designed to be placed on a corner of a lawn, and hence the few beds outside of the circle. These, of course, are left out when it is placed, as we have seen it, surrounded by turf.

Grape Growing in the South—A Frenchman's Views.

I receive many inquiries in regard to grape culture in South Carolina, and I will answer briefly, Mr. Editor, through your excellent magazine.

I have been a resident of Aiken since 1861, except about four years spent in Georgia and Alabama, engaged in the cultivation of the grape. Grape culture can be made profitable when conducted with more knowledge and skill. As grapes have heretofore been grown, they cannot be made profitable. First, too much land has been planted; Second, the right kinds of grapes have not been planted; Third, they have been planted on the poorest land; Fourth, they have received neither pruning, cultivation nor manure. What could one expect?

The kind of grapes for general cultivation are: Delaware, Diana, Concord, Clinton and Catawba. Pauline or Burgundy, Warren and Black July, are generally good for nothing here, though some years they bear beautifully.

On the Derby Farm, after having sent to New York, Philadelphia, Boston and Baltimore over 10,000 lbs. of grapes (Catawba,) and 7,000 lbs. to Charleston, Savannah and Atlanta; and after loosing in August over 10,000 lbs. of Catawbas by the rot, I have made 1,400 gallons of pure wine from Catawba, Black July, Burgundy, Isabella, and Scuppernong grapes; all from 2,000 vines, and the vineyard had never been well cultivated, though much better than most others here.

There is no better soil than this for the Catawba, Diana, Delaware, Concord and Clinton, and they will always pay. I have Scuppernong wine made here this year, that can not be excelled, I care not by whom or where made. In proof of this, I will, in a few weeks send you a sample.

Derby Farm, Aiken, S. C. L. MERZEAU.

More Out-Door Covered Seats.

One of the prettiest covered seats for many situations is the arbor seat, (Fig. 1,) and it is one of the cheapest to build as it takes but one post, and has a trellis roof, and may be built lighter and rougher than any other, with

Fig. 1.

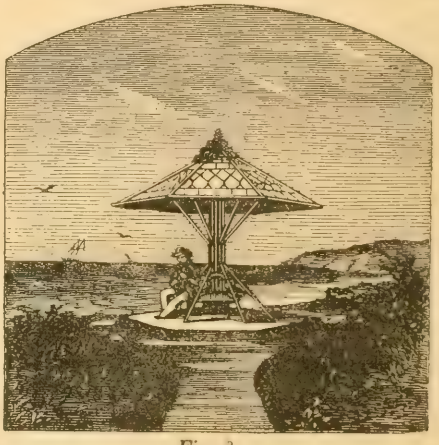


Fig. 2.

better effect, being covered with angle pieces of root on braces, for arms; and a piece of root or wild vine bent round to form a back to the seat and a protection to the vines. These should be trained up and round the post to the top, each sending out a branch along the upper brace, (to take its place when removed;) from the top, train each down its opposite arm to the end, branching off at pleasure, and interlacing so as to be self-supporting when the frame decays. The floor should be raised a foot above the level, and the roots of the vines protected by a grating. When fruit is not an object, other hardy flowering vines may be used, such as the purple wistaria, red trumpet creeper, etc.

The umbrella seat (Fig. 2) is the same in size and plan, but differs in having a close roof; the design shown is of shingles, cut in patterns; but pretty rustic roofs may be made of bark, moss, thatch, or sticks.

The frame, however, should be stouter, and the post thicker for this design than any other; being but one, the strain would be greater, and it would appear less. This is a foot thick, with six half-round pieces nailed round to form a cluster and receive the angle braces; the foot of these with the post should be mortised into a sunk cross-frame, well coated with coal-tar and sand. The floor should be covered with small stones and gravel, mixed with hot coal-tar, using as little tar as possible.

Spring Budding and Crown Grafting.

I have frequently practised spring budding and with satisfactory results. To be successful, the scions must be cut in the winter and kept buried until needed for budding, which is when the bark of the stock parts freely. I have succeeded very well also with crown grafting at this season, in the following manner, viz.: Use only small terminal shoots of the scions, whether peach or other fruit, cut off taperingly the lower end, cut off the stock, which ought to be a little larger than the scion, with an upward slope, then insert the scion between the bark and the wood, and paint over the cut surfaces with gum shellac, dissolved in alcohol, excluding the air from *all cut surface*, and the graft will generally succeed. This is, properly speaking, "crown grafting." I have frequently budded roses and pears, using spurs or short limbs, instead of eyes or buds, and found that they were more apt to succeed than the eyes, especially in the spring. R. C.

Dairy and Stock Department.

Is the South a Stock Country?—The Subject Resumed.

The habits of a people are almost as irreversable as their manners. A universal Southern habit has been, and probably will continue to be for some time, to make all agricultural enterprises subservient to the growth of cotton. Stock were considered a sort of convenient appendage, to perform the work of scavengers, and furnish semi-occasionally a round of beef, a leg of mutton, or a spare-rib. Seldom, if ever, has a regularly systematized stock farm been successfully conducted anywhere in the cotton belt, with a view to test its comparative profit with a similarly managed cotton plantation of equal investment. Common consent, however, seems to suggest that the time is upon us when more attention must be given to stock raising, and less money exported from the South to secure the importation of bacon and grease. That this can be done, both with economy and profit, does not admit of a doubt. But if the object be to grow stock for sale, and not simply to prevent buying, my judgment is that both economy and profit will be sacrificed.

On every Southern plantation a certain amount of bacon, beef and mutton may be grown, that scarcely costs an appreciable price. Every pound beyond this costs more than its market value. A stock farm should first of all make itself self-sustaining, which might be easily done anywhere in the United States—for with improved breeds of cattle, hogs and sheep, one-fourth the attention annually paid to the cotton patch will supply the planter with bacon and fresh meat at any and all seasons of the year, and furnish a sur

plus for the home market. But the effort to supply foreign markets, in competition with more Northern States, will always be a profitless enterprise, for the sole reason that in all grain growing countries the products of the soil are most easily transported to market in the shape of live stock. Corn in the Northwest, almost without a market, finds ready sale in the Eastern cities when converted into fatted cattle. Hence the monopoly to the cattle raisers of the Northwest. I may be told, the plains of Texas, our most Southern State, are the cattle yards whence are drawn the supplies of Northern markets. This is the result of peculiar and temporary circumstances. The State of Texas is an immense area of country, covered with spontaneous pasturage, and but sparsely populated. As her population increases, her perennial pastures will decrease; and as railroads are projected into her wilds, the pernicious influence of modern civilization will destroy many of her natural advantages, and in another decade Texas cattle will never be heard of east of the Mississippi River.

For additional reasons, butter and cheese making will remain a monopoly with the Northern States perhaps always. Our climate is a powerful antidote to successful dairying at the South. Southern butter must be consumed rapidly to prove palatable and wholesome. Northern butter will keep longer shipped South than will Southern fresh butter. True, I saw at the recent Barnwell Fair, in this State, delicious butter over twelve months old; but "one swallow doesn't make a summer." It was no economy to keep that butter. It may be kept, and kept pure, for a long time, at the South, but can it be kept for competition in market? At Fairfax C. H., in Virginia, I received, in April, 1862, twenty pounds of butter from home. It was kept in a tin can or box, opened three times daily, and not finally consumed until after the fight at Williamsburg, on the Peninsula. The last ounce was perfectly sweet and fresh. Anywhere in the South Atlantic or Gulf States that butter would have become rancid after the first exposure to a warm sun. Possibly in this instance a soldier's appetite was a preventive to rancidity.

Pasturing cattle on cultivated lands, except in very dry weather, is an expensive luxury. Their heavy tramp so materially injures the land, that the effect is more perceptible the following summer than are the advantages of winter subsoiling. Pasturing sufficiently, however, to glean our pea and corn fields, can always be done profitably in the fall. Beyond this, all Southern cattle must be fed from 15th of December till 1st of May. To do this most economically, is the question for Southern farmers. The straw from five acres of small grain, (I prefer oats,) and one-quarter of an acre of turnips, (fed raw one-half bushel once a day,) will keep a dry cow, steer or ox, in fair condition all winter. One acre of rye, sown on good land in September, will graze a calf and keep it fat during the same time. Besides these, we have shucks, sorghum seed meal, (nothing better,) and cotton seed meal. Of this last, I know nothing from experience, but give the views of many Northern farmers, (how strange!! to go to Rhode Island to learn the value of cotton seed as a cattle food,) when I say, cows giving twelve quarts

of milk daily, will soon have them increased to eighteen, by giving two quarts of cotton seed meal daily in summer, in addition to pasturage, and four quarts in winter; and the increased yield of milk will more than pay for the meal, besides increasing the value of the manure. Cotton seed meal is more highly prized all over the world, as a cattle food, than right here in the South, where it can be had almost for the asking. In Egypt, it is converted into oil and cake for feeding cattle, and is said to be more valuable in market than wheat, pound for pound.

Wherever clover can be profitably grown, no better fall pasturage need be sought for. Exclusive feeding upon this grass, I think, gives an unpalatable taste to milk and butter. Clover is occasionally objected to, because it will kill cows, etc. So it will, and so will peas, sorghum, corn and anything else fed to cows, as these things usually are. There is no greater gourmand than the cow. For if fed bountifully when hungry, she will eat as long as she can swallow, and never masticates in the first operation of eating. Of course, then, gaseous and fermenting food, like green clover, sorghum stalks or peas, if crammed when cold into a warm stomach, will produce pain and possibly take life. But my opinion is, far more Southern cattle die for the want of these nutritious substances than from eating too freely of them. I have seen an ordinary hamper basket of green undigested clover extracted by a surgical operation from the stomach of a cow, while she lay apparently in the agony of death, and yet she survived the operation, and lived only to die an unnatural death many months afterward.

If cattle have good pastures from May to December, and are fed but once a day from December till May, there is little danger of their ever eating themselves to death. This single meal, however, should be both bountiful and nutritious, and not the scanty handful of moulded shucks, usually given by most of our farmers to their dry cattle during the winter.

Let every farmer as he finishes reading this article visit his cattle shed, and ask himself the question, "Have I dealt justly with my cattle during the past three months?" If yea, then his visit will be one of pleasure. If nay, remorse should exact the resolution, never again to be without an abundance of winter provender for every head of cattle owned.

But to be properly cared for during the winter, all cattle must be housed. If one owns but a single cow, it is economy to pen that cow every night from May till December, and house her comfortably the rest of the year. Any one who can rive a board or hew a log, can build his own cow house. The following plan is suitable for any number of cattle. I propose the plan, however, for only six head:

Build a house ten feet wide and twenty feet long in the clear, and high enough to have a capacious loft. The floor of the loft should be ten feet wide and sixteen feet long, leaving two feet across each end of the house without a floor. This will allow food to be thrown down to the cattle. Six feet from each end of the house lay on the ground across the house two logs about eight inches thick. Fill up between these logs and the ends of the house with clay,

sand, or pounded rock. Thus six feet at each end of the house will be elevated eight inches above the centre passage of eight feet across the house. Upon this elevation, two feet from each end of the house, lay on an adze a hewn sill four by eight inches, thus two long troughs across the house will be formed, two feet wide and eight inches deep. Floor each trough with bricks laid in cement and divide them by partitions into three short troughs. Four feet above, and parallel to this sill, run a plate four inches square. One and a half feet from each side of the house and three inches to the left of the centre, cut a mortice one by three inches, in both sill and plate, and pin in firmly an upright stanchion ; six inches to the right of each of these three mortices cut another mortice one by four inches in the sill, and one by fourteen in the plate. Pin a similar stanchion into the lower mortice allowing it to work freely to the right and left through the length of the fourteen inch mortice. When perpendicular it will be parallel to the permanent stanchion. When open, the feet of the stanchions are six inches apart, but their upper ends are fourteen inches apart, forming a long narrow V. Into this V the cow puts her head and the moveable stanchion drawn upright, and a half inch pin put behind it through the plate.

Cows yoked in this manner, will stand quietly beside each other without an effort to fight, (for be it known, of all females in the world, cows are most pugnacious,) lie down and ruminate, and are always clean, because their droppings go into the alley behind them eight inches below the elevated ground upon which they are standing. For two or three days cows unaccustomed to this yoke, will have to be forced into it, but if fed there, they will in a very few days anxiously go into the stocks, and contentedly remain there during the night. I have often found it advantageous to keep my cattle standing in these yokes for thirty-six or forty-eight hours in cold freezing weather even without water. He who winters his cattle in this wise for the first time, will only wonder why he did not do so years ago.

The South presents so many natural advantages to the agriculturist, that mixed husbandry will always be more remunerative than specialities in farming. While stock raising may not be comparatively remunerative, no planter should excuse himself for buying bacon or fresh meat. A proper appreciation of the present should admonish the planter, that food for the laborer must be paid for in labor, and the planter's sole care should be, to grow meat and bread for his immediate table at as little cost as possible. No argument is needed to prove that this can be done almost without cost. We are a wasteful people, and could this trait be converted into its reverse, we would be astonished at our thrift. Southern farmers leave too much of their work to be done by others. A careful, prudent, cleanly, economical negro, is an anomoly, and yet these spendthrifts generally have the management of the farm yard, where the usual waste, if economically utilized, would grow meat enough to supply the owner's table.

Till 1865, I supplied my plantation with home raised meats. Since then I have done the same for my family. A friend not long since asked me, how

do you raise your own hog meat? My reply was, I see my hogs every day. And so should every planter, else not own them. For seeing them, he knows them and their wants, and knowing their wants he will supply them. If he does not he is a brute: if he cannot he should sell, for it is inhuman to keep animals in poverty. This is the whole argument in a nut shell.

D. WYATT AIKEN.

The Alderney or Jersey Breed of Cattle.

The breed known as Alderney or Jersey, originated on the group of beautiful islands which lie near the shores of France, in the bay formed by the coasts of Normandy and Britany, where these cattle are treated with great care, and the purity of the race scrupulously preserved. So important was this unmixed blood deemed, that an Act of the Insular Legislature, passed in 1789, and still enforced, forbids the importation into Jersey of "any cow, heifer, calf or bull," under penalty of 200 livres and the forfeiture of the vessel bringing it.

The strong point of the Alderneys is the richness of their milk and their butter-producing qualities. "The race," the *Practical Farmer* says, "resembles some individuals of the human family in having but one idea, and, as it often turns out, running upon a single string, produces extraordinary development in one direction. Alderneys, besides being beautiful to look upon, seem to know nothing else than making good yellow butter, and *more* of it in twelve months than any other of the genus. Though looking delicate, they are hardy, and, so far as we have observed, hold their own under ordinary *fair* treatment given to other cows, and we should think ought to do as well South as any. The object with them (and with all cows, if profitable returns are expected) should not be to stint, but for owners to give them proper food, and all of it they can be coaxed to eat. Milch cows require something more than merely to *live;* they are wanted to thrive, and the profit from them consists in the return from food given, over and above what is required by the natural wants of the system." See our Frontispiece for a portrait of a fine Alderney Cow.

Col. D. Wyatt Aiken and Stock Growing in the South.

You must lay the blame of my protracted silence, Mr. Editor, to the master pen of that distinguished agriculturist, Col. D. Wyatt Aiken.

While the Northern agricultural magazines are mere advertising sheets for humbug potato and grape varieties, and contain plans of buildings, the cost of which may suit the purse of A. T. Stewart *et id omne genus*, Colonel Aiken seems to take into consideration our altered circumstances and our weak resources, and points out practical modes of benefitting our condition with the means at hand. Hence THE RURAL CAROLINIAN, in my humble opinion,

approaches more nearly towards supplying our people with practical and cheap modes of renovation and improvement than any periodical I meet with. I did not feel that my communications demanded even passing notice, when you had a writer who could enlighten your readers with such a superior article as "Is the South a Stock Country." But as I have written previously with a view to encourage the growing of clover and the grasses and the rearing of herds, I wish to be more fully understood on the subject.

I will preface by reiterating that I am a Virginia stock raiser, who for three years after the war lived in North Carolina, in a county bordering on South Carolina. I found clover very profitable in North Carolina—in that it kept me well supplied with rich milk and butter the year round from the yield of one choice cow; besides, I purchased poor stock in February and fattened a few for the May market when meats are both scarce and high. I, however, paid as much attention to my cattle as I did to my horses.

Colonel Aiken is correct in the main as to the South not being a stock country—yet I could not live on any farm without clover fields; first, because of the beef and butter; and secondly, because a clover fallow ensures a good wheat crop if any is made anywhere that season.

I shall briefly point out the errors of our Southern people in the employment of clover and grasses. Colonel Aiken exposes the error in his article entitled "Clover and its Effects." He speaks of the dry spells destroying his clover stand. Such is the case in the grass sections of Virginia; and in such an event our graziers invariably sow again, and continue to repeat the dose until a stand is obtained. In other words, they exhibit the same amount of perseverance displayed by cotton planters, who continue to plant in spite of drouths, grass, low prices, etc., hoping to make a happy hit sometime.

Again, Col. A. remarks that he pastured on a lot of but one and a half acres, "a mare and colt and a few pet animals." In the best of Virginia grass lands, it is estimated, that it takes at least five acres in grass to fatten a steer, within the seven grass months, while in some localities it takes a greater area. Thus you will see that the Southern people expect more from a small quantity of land than it is capable of yielding in a more favored locality. Again, I notice that the custom prevails in the South to pasture clover so closely as to let the scorching rays of the sun destroy the roots, when the course is to avoid close pasturing for those reasons. My experience was that it was preferable to mow the clover and feed it to stock. Now, again, I will remark an improper course pursued by the Southern people. Clover should be mowed but one time each season; the second crop should be left to fall down, shade and improve the land, thus returning to the soil what was taken from it by first crop. Clover, if taken from the land twice, will go as far towards impoverishing the land as any small grain crop, while if the second crop is left on the land, the soil will be greatly improved. So much for clover.

I believe it is conceded on all sides, that in England, as well as in this country, both North and South, orchard grass better adapts itself to the

various climates than any grass known. In addition to this paramount feature, it will be observed that its seed comes to maturity at the same time as clover seed, hence both can be mowed at same time. 'Tis true orchard grass succeeds better in rich moist soil than it does in thin land, but no prudent farmer will waste clover seed on a barren spot, in which there is no soil or manure.

The remedy applied to prevent grass lots from being burned up by drouths, is gypsum, or what is commonly known as ground plaster. A bushel per acre, applied twice or thrice during the heated term, will produce a marked effect. The plaster collects the dampness of the atmosphere and conducts it and volatile ammonia to the roots of the grass. On the closely pastured fields of Virginia, plaster has been used with marked effect to restore vitality.

I wish Col. Aiken would take a five acre lot, manure it heavily, lime it and put hard wood ashes in it, sow one gallon red sapling clover seed and one bushel orchard grass per acre, and when it gets cleverly out of the ground, apply one bushel of plaster per acre as a top dressing, and when the dry season sets in, try another bushel per acre of the plaster; mow one crop yearly, feed his mules on the yield, keep an account of the expense incurred, and draw a balance with his corn crib, and I will guarantee that the RURAL CAROLINIAN will present such an exhibit of results from his pen as will convince its readers, that while the South is, strictly speaking, anything but a stock country, yet there are certain grasses which, if applied in the South and used as in the grass sections of Virginia, will forty years hence, without additional sowing, present a beautiful orchard grass sod on every practical farmer's farm. The corn crib will not then be overtaxed, and when the laborers are picking cotton, the mules and cows will be subsisted on rich succulent green food, which will put them in fine condition to pass safely through the winter.

"MORE ANON."

Stock and Dairy Miscellany.

CATTLE FOR THE SOUTH.

Mr. Richard Peters, the well known breeder of improved stock in Georgia, is reported as saying that neither Short-Horn nor Devon cattle are healthy in that locality, but a cross of Brahmin stock with the Alderney, or Devon, are healthy and profitable. Brahmin stock was exhibited at the Georgia State Fair last fall. We have been informed that they are hardy, adapted to the climate, easily kept, and excellent milkers.

Quality of Butter from Soiling Crops.

The flavor of the butter made from soiling crops will not keep so well as that made from the perennial grasses, but will give entire satisfaction for present use, and will keep, with proper care, for short periods. In fact, it will be as valuable for home consumption as if made from the best grasses;

yet there is nothing that will make butter with such remarkable keeping qualities on a long voyage as the natural grasses. This, however, is a question of little practical importance, as we should be quite satisfied with the result of furnishing, in abundance, a palatable article of butter for our own consumption.

Remedy for Hen Lice.

A correspondent of the *Southern Farmer* says, that having tried many remedies for the destruction of vermin on fowls, he finds nothing so effective as a small piece of lard rubbed on the back and under each wing. He has cured hens in one day that were unable to stand up on account of the ravages of lice.

The Best Stock for the South.

Rev. C. W. Howard, in *The Plantation*, says that after many years of experience and careful observation, under favorable opportunities, he does not hesitate to sum up as the result of both, the following opinion as to the best live stock for the Southern planter: Morgan horses, Ayrshire cattle, Essex hogs, and Merino sheep.

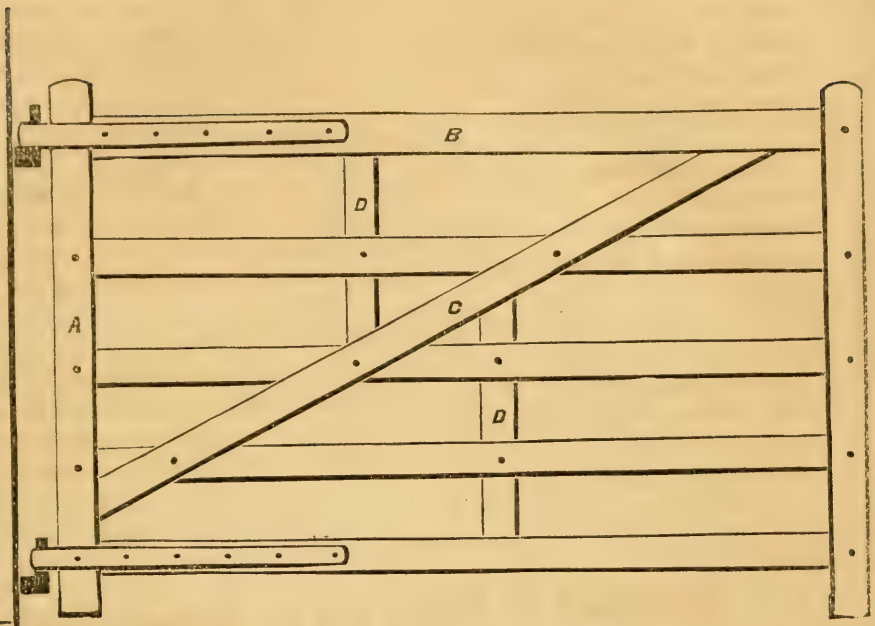
Department of Mining and the Mechanic Arts.

Farm Gates and the Principle of the Crane.

I send you, Mr. Editor, for the benefit of the readers of The Rural Carolinian, a diagram of one of my gates, and if I have the boldness to claim for it the merit of perfection, with all humility and frankness, I *dis*claim at the same time, all merit of authorship; as the man who made the first crane is clearly entitled to that, and yet, is it not surprising that, as well as the principle of the crane is understood by all mechanics, and by all classes of well informed persons, as I suppose, this principle was not incorporated in the first gate that was made? It was not, nor has it been subsequently introduced by any one, so far as my observation extends, although I have seen some near approaches to it. But as it is not possible to suppose that any one could *come near* making a crane if his intention was to make one, we have to consider these persons as innocent of all such intentions.

You will hardly see a gate with the diagonal omitted, one half running one way, the other half the other way. It is put in as a support to the horizontal slats, as I suppose, or because it is usual and looks well. Two vertical pieces extending across the gate, and properly divided, would do the work much better.

I have lately seen the plan of a gate for which some merit (much, perhaps,) is claimed, with the diagonal running the wrong way! This diagonal



starts from the crotch at the lower right hand corner, and terminates with a dovetail, which is let into the back vertical frame piece (A in my diagram,) some few inches above the top rail of the gate. Verily, this dovetail has something to do; no less than to *pull* against an enemy, sleepless, ruthless and untiring—the old leveler known familiarly as *gravitation.* This dovetail is expected to help, by its pulling, the united efforts of every other part of the gate, in resisting the common enemy; for every piece, and every joint, and every rivet will have duty to perform to the full limit of its capacity. This gate (a picture of it is before me) was evidently put together by a workman. Every slat enters a tight fitting mortice at both ends, and each piece is firmly rivited to such piece as crosses it. It is a gate that may last "thirty years," provided the material be of the best kind, and protected by an occasional coat of paint, and, provided further, it be not imposed upon during that time. But all persons are cautioned against suspending half a dozen fifty-six pound weights from the upper right hand corner of that gate, lest they bring the old enemy into play with a vengeance. The crane defies him, for it cannot obey and live, although conceding fealty. It never obeys but once. It never responds to its lord's coming, but comes when it does come with a crash, and in fragments. You may crush the crane, but you cannot make it sway.

It will be perceived that I have thrown but three slats into my gate, which will do to turn cattle; but I do not present it as a finished gate. Some of mine have six, others nine slats. But, all that, the filling-in, the ornamenta-

tion, is left to the taste of each person. The principle upon which a gate should be built is all that I desire to enforce, and hence I am sparing of the filling-in, lest the attention of the observer should be diverted from the contemplation of the crane to the insignificant matters of detail.

The three pieces of timber, A B and C, constitute the crane. All else goes into the composition of a gate; but it brings no force except to turn stock, which it does so long as it is held in position by the crane. The pieces are placed as intended. Had my material been iron, the lower end of the diagonal (C) would have been lodged in the crotch at the hinge, as the strongest possible point, but having wood to deal with, a compromise had to be struck to save the wood from premature decay. The lower end of C, therefore, is elevated an inch to leave the escape of water at the crotch unobstructed.

With regard to the massiveness of gates or otherwise, a diversity of tastes exists. I leave this to the judgment of those most concerned with the remark that, I think the five pieces constituting the skeleton should be of the same size.

The slats should enter their mortices at a perfect fit, and be set into the diagonal (C) sufficiently tight to require some use of the mallet. This to exclude water.

The short verticals in the middle of the gate should not be set into the pieces upon which they rest, on account of water. They should be fitted snugly to their positions and secured there by two small nails, or one, at each end. They are only intended to strengthen the slats which might be accidentily broken by a hog running against them.

My gate is hung to a tree. There is nothing of wood, comparable to a living tree for this purpose; the top to be largely reduced as a preparation, as a security against wind.

I use a hook as a fastening, in preference to all other modes. If a man leaves your gate open, with this arrangement about it, he does it wilfully. An old sow will lift and shake loose almost any other contrivance.

Fifteen years ago I had two very rough gates made of timber wet from the mill, without an attempt at planing, the heart and sap being worked up indifferently. They were put together by a workman; but, instead of mortice, the slats were *let into* the two vertical pieces, and secured there by nailing slats over them. These gates were hung to trees sixteen to twenty inches diameter, and then were thoroughly drenched—saturated with coal tar as an experiment. I have never made a second application of the tar; and yet, to-day, I cannot distinguish the sap from the heart. It is all equally solid, without the slightest evidence of decay, or of wear from the weather.

Why may not these rough, sappy gates linger to rejoice, not on their thirtieth but on their hundredth anniversary? They have not changed perceptably in fifteen years. They come up to their posts as softly and as truly as on their first day, and they maintain precisely their original distances from the ground; and do they not go far to establish the preservative properties of coal tar? They establish it, I think. THOS. S. DABNEY.

Burbigh, Miss.

Department of Natural History.

Specimens of insects, securely packed, (according to instructions given in our October number,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. CHARLES R. DODGE, Department of Agriculture, Washington, D. C.

Our Friend the Mole.

That this little animal is a friend none should deny, yet there are well informed men who not only denounce him for the mischief he does to lawns, by his mining operations, but even hold him accountable for the rows of peas, etc, that are found devastated by some underground marauder which they do not chance to see.

That much abused bird, the crow, though few farmers are willing to acknowledge it, fully repays for the corn he pulls up, by devouring hundreds of the white grub in the spring. Mr. Agriculturist is oftentimes just as blind to the good deeds of the mole as he is to those of the crow in the spring time.

That the mole is not a vegetarian, but subsists entirely on *animal* substances, such as worms, insects, etc., has been proved by experiment, time and again. Moles placed in boxes of soil, containing roots, seeds, and other vegetable matter, refused everything; but, after having been transferred to boxes in which grubs, earthworms, etc., had been placed, remained contented as long as plenty of food was provided. We have read of a mole, the pet of a naturalist, that, having escaped from its quarters, was found in a box of soil containing a number of chrysalides of rare moths, which he was breeding; and it is needless to say the *rascal* (in this particular case) had devoured the whole lot.

A farmer sees a mole track running right through a whole row of potatoes; he digs down and finds the tubers eaten or entirely destroyed; and, on this little bit of circumstantial evidence he procures a trap, and destroys the life of the poor luckless mole, while the real author of the mischief, the field mouse (which has made use of the burrow,) is picking his teeth and preparing for a new foraging expedition in another part of the field. The reason for the moles digging along the row is easily explained from the fact that the manure, or the moisture around the roots of the plants, attracts worms, grubs, and the various insects usually found in such places. He digs where he gets the best pay.

Audibon mentions having twice seen their nests, which were about eight inches below the surface, with galleries leading off in two or three directions. The excavation was rather large, and contained a quantity of oak leaves on the outer surface, and lined with the soft dried leaves of crab grass. In one case the young numbered five; in another nine.

The mole inhabits the Northern and Eastern States, and extends South to Florida, and, according to one author, has been found as far North as Hudson Bay.

Insect Injuries.

(FOURTH AND LAST PAPER.)

We have glanced, in a hurried manner, at the various groups of insects infesting the foliage and flowers, stems, trunk, etc., of plants, and now it only remains to speak of a few ways in which insects are injurious to fruit and seeds.

Many insects have the habit of devouring fruit directly; and, too, after they are grown up beetles, and are not supposed to give way to appetite like the ever-greedy larva. The *Cetonians*, to which group the "June bug" belongs, have this habit. Some of the snout beetles are also fond of ripe fruit, in the imago state. *Ophryastes vittatus* we have taken in the north, in numbers, on ripe currants, their "bills," and even heads, thrust far into the juicy fruit.

Other insects, and by far the greater number, bore in fruit and seeds in the *larval stages*, as the plum curculio, which causes the fruit to fall, after which the insect performs its transformations. In the same family (*Curculionedæ*) many small insects are found which do great injury by living within growing seeds. *Bruchus pisi* starts from a small egg deposited in the pod of the pea, right over the place where a young pea is beginning to form; the pea grows and the larva grows, and at harvest time peas and *bugs* are all harvested together, the perfect beetle boring out in the spring. This is why late planted peas escape; the females have all laid their eggs before the young peas begin to form. The natural history of the pea bug will serve as an illustration for nearly all seed-boring insects.

Among those insects which injure by sucking the juices of ripe fruits, may be mentioned many of the plant-bugs (*Heteroptera*,) which may be recognized by the disagreeable odor they impart to the fingers whenever touched. Probably many of our readers have had an unpleasant acquaintance with them when eating fruit from the vines Last summer we were shown some pears covered with indentations, which had doubtless been caused by the puncture of scale insects, as some of the scales (*Cocus*) were still to be seen.

Cecidomfia tritici does immense damage to wheat by feeding upon the grain when it is soft and milky. Stored grains and seeds are injured by a number of insects. The larvæ of *Tinea zeæ* find a rich feast in the corn bin. Corn is also attacked by three or four species of beetles. Another *Tinea* (*Lepedoptera*) destroys wheat; while a small beetle, *Sitophilus oryzae*, lives in all its stages within the grain.

Had we time and space, hundreds of examples might be given, showing how insects are injurious to vegetation. While in this article we have only mentioned a few, indeed almost too few, for the subject is one that might be written upon for a lifetime, and then half not be told.

Other forms of insects, such as those destructive to animal substances, or injurious to living animals, the various parasites, etc., will be spoken of in separate articles at some future time.

A Word to the Wise.

Now that the season for the appearance of insects is approaching, the readers of this journal are requested to collect and forward specimens of insects, whether injurious species or not, as it is particularly desirable to obtain specimens of Southern insects for study and comparison.

Any notes connected with their habits, which may be learned by examination or observation, should be communicated, and in this way the agriculturists of the whole South may be mutually benefitted.

Let the farmers or planters become entomological correspondents themselves; the field is a large one, and especially so in the South, where *little* attention has been paid to this important subject. If all will become interested in the work, much good may be done that will show itself even in one season.

When specimens are forwarded, always state whether the insect is injurious to a particular crop, and if sent for information concerning habits, etc., or merely for *name*.

Insects in the Garden.

Was the past summer unusually favorable to insects? In the early summer the worm at the root killed all my squash vines of every variety before I suspected their presence, never having had them so troublesome before, but I caught a number of the worms, confined them until they turned to their fly, and now I know them and will keep a look out for them each spring.

Next, a bug, something like the fire-fly, attacked the blossoms of my crop of okra, so that for some time I did not get one single pod from two well manured rows, each 105 feet long. As soon as I suspected the cause, I took to killing, between finger and thumb, every bug that I could find each morning, and the result was that they disappeared, and my okra recommenced bearing, and continued to do so until frost.

The tomato worm proved unusually troublesome, probably owing to their being quite a number of Jamestown weeds in a small pasture near by. My plan to destroy these horn blowers, heretofore, has been to cultivate the Petunia near my house, and as these insects are very fond of the flowers, to kill them with a small paddle about twilight.

Can you give me any remedy for the cabbage aphis? Some years since I had to abandon the cultivation of Brussells Sprouts because these lice were so fond of them; and now they have attacked my Savoy plants, and the green worm were and are still very bad upon my cabbages of every kind.

ROBERT CHISOLM.

The Nut Bearing Trees of the South.

The Hickories which form the genera *carya* of the botanist, have nine species, all of which are indigenous in the Southern States. Foremost among these, is the Pecan, which is the largest size, has the largest leaves and the best nuts of all the Hickories. It has large pennate leaves, from one to nearly two feet in length, of from thirteen to fifteen large lanceolate leaflets. It puts forth its leaves late in the spring and also its flowers, hence the young fruit is not so liable to be killed by the frost, and it is generally a constant bearer. It thrives best in rich bottom lands, but will grow on any moderately fertile soil. It is a rapid grower in favorable situations, sending up strong, stiff, tough shoots to the height of five or six feet in one season. Some trees bear at the age of from six to seven years, others require a longer time. Much in this respect depending on soil and situation. I have young trees, six and seven years old, which are from nine to twelve inches in diameter, and from twenty to twenty-five feet high, growing in the open field, with large, fine spreading heads on low bodies. They are beautiful trees and now they begin to be useful, for several of them began to bear fruit the past season. The nuts of the Pecan vary greatly in size, in the thickness of the shell and also in the sweetness of the kernel. I measured one which I obtained from a tree in San Saba County, in Texas, which, without the husk, was one and three-fourth inches long. In propagating the Pecan from the fruit, care should be taken to obtain that which has the largest size. The kernel of the Pecan is almost always good, yet I have tasted some which were slightly bitter.

Of all the American nuts with which I am acquainted, I consider the Pecan to be the best, and much superior to the English Walnut. On the Colorado bottom, near Austin, I recently counted the annual rings on a Pecan which had been cut down a few hours previously. It was fifty-three years old, and thirty-two inches in diameter at stump height. I measured one ten years ago, on the Santee River, in South Carolina, which was thirteen feet and ten inches in circumference at three feet from the ground. This and several others of a similar size, growing there, had been planted by the Huguenots, from nuts obtained in Louisiana. On the Brazos, near the town of Richmond, in the southern part of Texas, I measured one which was sixteen feet and five inches in circumference at three feet from the ground and about one hundred feet high, an unusual height for the Pecan, which is seldom more than twenty feet high.

It is not indigenous in the Atlantic Seaboard States, as it grows north as far as the latitude of St. Louis, and also bears fruit in its northern localities. It can, doubtless, be cultivated throughout a large portion of the United States.

The wood of the Pecan makes the best of fuel, but is inferior in toughness, being more easily broken than that of the Shell-Bark Hickory, and several others of the genera. PROF. S. B. BUCKLEY, *In Florida Land Register.*

THE GOPHER—WHAT IS IT?—In Florida, and other parts of the South, it is a tortoise that is called *gopher*. He burrows in sandy plains, and upon pine barrens, basks in the sun through the day, and then strikes at night for the sweet potato fields and the garden melons. In the West, a little animal, called also the prairie squirrel, is familiarly known as the gopher. These animals are also found in parts of the South. They burrow like moles, sleep during the day, and prowl about for their food at night, eating the roots of trees and shrubs, and feasting to the great disgust of farmers, upon melon patches and garden vegetables.

THE RURAL CAROLINIAN.

VOL. II.] CHARLESTON, S. C., FEBRUARY, 1871. No. V

"*Progress with Prudence, Practice with Science.*"

D. H. JACQUES, EDITOR.

CO-OPERATION IN FARMING.

By combined effort many things may be accomplished which to individuals working by themselves would be impossible. This fact is illustrated everywhere around us in trade and the mechanical industries. Business men see at once the advantages which large capital and varied acquirements and experience always afford, and they set about securing both for any enterprise they may have in view, by organizing an association, company, or firm into which they draw the required means, pecuniary and mental. Our phosphate companies are familiar examples, and their success shows the correctness of the principle on which they are based.

There are great and, for the present, perhaps, insurmountable obstacles in the way of a general application of this principle to agricultural operations, some of which will at once suggest themselves to the reader's mind; but we have long entertained the opinion that there are special cases in which combined action among agriculturists is not only practicable, but almost, if not quite, essential to any high degree of success. One of these cases is presented here in the coast region of South Carolina at the present time.

Our Low Country, including the Sea Islands, comprises, in our opinion, one of the finest regions on the face of the globe; never half appreciated even by the people born and bred in it, and never developed to the extent of one-hundredth part of its vast resources. We do not, in speaking thus, loose sight of the fact that this region has boasted some of the most scientific and skillful planters the world has ever produced, and that their race is by no means extinct at the present day. We would detract nothing from the credit justly due to them; but they were devoted almost exclusively to two staples—cotton and rice. They made fortunes for themselves, perhaps, but they did not largely develope the resources of the country. These fortunes have been swept away by the ruthless hand of war; and even the resumption of the special agricultural industries, formerly so extensively carried on, is very generally impossible. The development of the country, which the spirit of the times and the best interests of the State demand, seem to be out of the question.

But, while an individual planter has not the necessary capital to undertake the work, now required in this country, or to avail himself of the economies which improved implements, machinery and heavy manuring would secure, a hundred planters combining their means might make both easy. Shall we not find in the application of the principle of associated effort, in some form, the solution of the problem now presented to us here in the Low Country? Why may we not have our agricultural as well as our phosphate companies?

We shall, possibly, have much more to say on this subject at another time, and our principal object in this brief statement of the question is to set wiser heads to thinking, and, perchance, better skilled and more fluent pens to writing. Why not?

IMPROVED VARIETIES OF CORN.

No plant that we cultivate is susceptible of greater or easier improvement than Indian Corn. It is constantly manifesting a tendency to vary, and its variations are largely subject to control. We can hardly set

limits to the improvements that might be made in it, and yet how little is done in this direction.

Suppose the difference in yield per acre between a good and poor variety, to be only one bushel. The aggregate increase in the United States would not be less than 40,000,000 bushels a year; and this increase would be nearly all clear profit. But we have no doubt a much greater gain can be made by a judicious crossing and a continued selection of seed. The improvement may include several particulars—the size of the grain; the quality of the grain; the number of rows on a cob; the length of the ears; and the number of ears to a stock.

Begin, this season, with a variety combining as many of these good qualities as possible, and in selecting your seed from the field for next season, take only the best ears from the most prolific stalks. This will be a good beginning—the first step in the right direction. Follow this course from year to year and you will be astonished at the result. If every planter would take the pains to improve his seed, there would soon be no market, at fancy prices, for new varieties of "prolific" corn or cotton. *Each planter would have his own "prolific,"* and that of the most careful breeder would simply be better than all others in proportion to the care and attention bestowed in producing and sustaining it.

Our good friend and valued contributor, Mr. P. J. Berckmans, of Fruitland Nurseries, Augusta, Ga., has sent us a fine collection of deciduous and evergreen trees, shrubs and vines for our grounds. They came to hand—thanks to skillful packing—with every twig and leaf as perfect and as fresh as when taken from the nursery or greenhouse. Our friend knows that THE RURAL CAROLINIAN is not devoted to puffery, and we know that he neither needs nor desires it; so we simply record here our hearty thanks for his handsome New Year's gift.

We ask special attention to the articles on "High Farming Without Manure," by Dr. E. M. Pendleton, of Sparta, Ga., in which Professor Ville's system of agriculture is fitly noticed, and "Experiments with Commercial Fertilizers," by Dr. Ed. B. Smith. We commend the latter to those who think these fertilizers a failure.

An excellent article on "The Fig," from the pen of that well-informed and skillful pomologist, Mr. P. J. Berckmans, received too late for this number, will appear in our next.

A can of peaches put up in 1869, and still in perfect condition, lately sent us by Dr. C. J. Faust, Graham's Turn Out, S. C., furnishes a convincing evidence of the folly of importing our canned fruit from the North. The donor will please accept our thanks.

W. H. Rathbone, Uncasville, Conn., has our thanks for a package of Trophy Tomato seed. We are glad to have the opportunity to give the Trophy a trial.

The stock question is ably discussed in its proper department by our associate, Col. D. Wyatt Aiken. See, in connection, his previous article (October number). "More Anon" touches the same subject in connection with that of grasses.

PAMPHLETS AND CATALOGUES.

"Annals of Bee Culture for 1870," by D. L. Adair, is a valuable little manual in which no one engaged in keeping bees, or seeking information on the subject, will regret investing 50 cents. Address the author at Hawksville, Ky. "Outlines of Bee Culture" by the same author will be sent for 20 cents, and is well worth it.

—— "Pennsylvania Fruit Growers Society," embracing proceedings, etc., from 1867 to 1870, contains some valuable contributions to American Pomology.

—— "New York Observer Almanac for 1871" is a closely filled, fine-printed pamphlet of 200 pages, containing an immense amount of valuable statistical matter. (Sydney E. Morse & Co., 37 Park Row, New York; $1.)

—— The "Spring Catalogue of C. L. Allen & Co., 74 Fulton street, Brooklyn, N. Y.," is out and will be sent free to all applicants. Its lists of vegetable and flower seeds and bedding plants are very extensive.

—— Gregory's "Catalogue of Choice Vegetable and Flower Seeds for 1871," has de-

scriptions of many novelties, in addition to the usual standard varieties. (Jas. J. H. Gregory, Marblehod, Mass.)

—— "Floral Guide and Gardener's Manual for 1871." Illustrated with full page cuts of Aquilegia, Canary Flower, Pansy, Stock, Gladiolus and Tritoma, besides beautiful cuts of Asters, Balsam, Cobea, Gourds, Hollyhock, Double Rose, Portulaca, Zinnia, Cabbages, Melons, Squash, etc., etc., giving plain directions for the culture of more than 1000 varieties of flowers and vegetables. (Address Phelps & Reynolds, Rochester, N. Y., inclosing 5 cents.)

—— Redmond & Manard, Gulf Shore Nurseries, Pass Christian, Miss., have sent us their Catalogue for 1871. In addition to apples, pears, peaches, grapes and plums, they advertise tea plants, oranges, lemons, banana, guava, pineapple and jujube.

OUR EXCHANGES.

——In *Scribner's Monthly* we have four magazines in one, the new publication taking the place of the *Riverside Magazine*, *Hours at Home*, and *Putnam's Monthly*. We have received the January number and are happy to be able to say that it is emphatically a good one—well filled, handsomely printed and tastefully illustrated. If it shall keep up to the high standard of the number before us it will certainly be worthy of the position it aims at—the great American Family Magazine. That accomplished writer J. G. Holland is editor. (Scribner, New York; $3 a year.)

——The publishers of "Burke's Weekly for Boys and Girls," have changed that publication into a first-class monthly magazine for the boys and girls of the South. The first number contains the opening chapters of a new story by the author of "Big Foot Wallace," "Jack Dobell," etc., entitled *The Indians at Dirt-Dauber's Nest; a tale of the Seminoles*—told in Mr. Duval's best style. (J. W. Burke & Co., Macon, Ga.; $2 a year.)

—— We have still another addition to the list of agricultural papers in *The Rural Messenger*, which comes to us from Petersburg, Va. It is a good looking paper, and its first number, now before us, makes a favorable impression in regard to its matter as well as its manner. (Thos. L. Pleasants and Maj. Richard W. Jones, editors; Ege, Bozel & Rodgers, publishers; $2 a year.)

—— Mr. C. W. Howard has assumed the editorial management of the Atlanta *Plantation*, Col. T. C. Howard retiring. The latter was an excellent editor, and the publishers are to be congratulated on being able to fill his place so acceptably. We welcome Mr. Howard back into the editorial fraternity.

—— *The Youth's Companion* is an eight-paged weekly paper for the young people and the family. Among its contributors are Miss Louise M. Alcott, Professor James de Mille and Rev. E. E. Hale. "A Story of Adventure for Boys," is one of its attractive features. (Boston; $1 50 a year.)

—— Oliver Optic's Magazine, *Our Boys and Girls*, is one of the best juvenile magazines in the country. The January number has the opening chapter of "The Doctor's Daughter," a new serial story for girls, by that unequaled writer, Sophie May (Miss Rebecca S. Clarke,) and many other attractive articles. (Lee & Shepard, publishers, 126 Washington street, Boston; $2 50 a year.)

—— *The American Rural Home* is the name of a handsome and well filled weekly illustrated journal, the first number of which has reached us. It promises to be a useful and entertaining paper for all ruralists. (A. A. Hopkins and C. F. Wilcox, Rochester, N. Y.; $2 a year.

—— The subscription price of *Frank Leslie's Boys' and Girls' Weekly* is $2 50 a year, instead of $2 as stated in our last, and the *Ladies' Magazine* $3 50.

—— The publishers of *The People's Literary Companion*, (monthly—75 cents a year,) Messrs. E. C. Allen & Co., Augusta, Maine, claim a circulation of over half a million of copies of their paper, showing that a periodical of large circulation can be established and maintained outside of New York.

—— *The Inventor and Manufacturer*, (English and German editions,) is an excellent monthly journal published in 131 Fourth street, Cincinnati, Ohio, at $1 a year.

—— *The Egyptian Agriculturist* is the name of a periodical lately established in Cairo,

Egypt. Who can say that the world does not move even in the land of the Pharaohs.

—— There is (or was) a *Revu Horticole* published in Paris. Another journal with the same name has been started at Ringelhiem, Hanover, and is published in three languages—English, French and German.

—— *The Gardener's Monthly* copies Dr. Wylie's article on "The Janie Wylie Grape," and gives credit to *The Carolina Farmer*. The article appeared originally in THE RURAL CAROLINIAN.

FARM AND GARDEN NOTES.

Fig Growing for Profit.

If we can prepare here as good an article of dried figs as we now import so largely, we are convinced that the business may be made a profitable one; and that we *can* do so, we see no reason to doubt. With the right kinds of figs, an adequate knowledge of the business, (which can be obtained by experience, if in no other way,) and the same degree of attention, industry and perseverance which we now give to other crops, there need be no failure. For the purpose of testing different varieties in drying, we purpose to grow every desirable sort known, and shall be greatly obliged to any person having a rare or peculiarly valuable kind, for a rooted layer or a cutting of it.

The Casaba Melon.

Mr. Robert Chisolm writes as follows relative to this excellent (but not new) melon:

The past season I tried quite a number of varieties of both water and musk melons; the seeds, home grown, as well as procured from the East and West, and out of them all, tried in several different ways and places, the only seed that succeeded was the "Casaba" that you gave me. The seeds were planted in the root potato field, and on one bed manured with stable manure and superphosphate, and in both places I got fine and perfect melons, of very fair size; and if not the most delicious that I had ever raised, were certainly as good as any. Although I do not intend to give up all other kinds, yet I mean to hold on to the Casaba, either until it fails or I find a better variety.

Cendres de Mer—Sea Ashes.

According to a correspondent of the *South-Land*, this valuable fertilizer is made by burning the peat or vegetable turf from the salt-marshes. In Holland, where large quantities of ashes are made, the peat is taken from the marshes which are covered in winter with salt or brackish water. It is cut into pieces in the shape of brick, laid out to dry, and when thoroughly dried by the sun and wind, is put up in circular heaps and burned. Any man who can burn coal or lime, can burn peat. The ashes are then riddled, put up in bags, and are ready for use.

To Kill Weeds on Walks.

Weeds on the walks, an exchange says, may be kept under by watering the gravel with the following solution: Dissolve two pounds of vitrol in an old pan, and then dilute it with six or seven gallons of water, apply this through the fine rose of a watering pot, and it will destroy every sign of vegetation. A heavy top dressing of salt will produce the same effect.

Rather too Cheap!

Angora goats cannot be imported for $1 25 as the types made us say in our last number, but for $125, (one hundred and twenty-five dollars,) which is very cheap in comparison with the prices at which they were formerly held.

MERE MENTION.

The effects of the freeze, which occurred just previous to Christmas are said to be quite disastrous in Florida where the orange trees are badly injured. Our correspondent, Judge Edwards, of Micanopy, lost 25,000 oranges.

——The claim that the maize or Indian corn plant, is indigenous has been contested, and recent investigations of certain Chinese records are cited to prove that it was cultivated in China prior to the discovery of America.

——An invoice of forty-five tons of cotton seed was lately shipped to Smyrna, for the purpose of planting, the object being to start the raising of cotton in those sections from American seed.

—— The wine crop of California for 1870 is estimated at 7,500,000 gallons, against 5,000,000 gallons in 1869.

—— It is the custom in Russia to eat radishes before dinner in order to sharpen the appetite.

——Three hundred thousand oranges is the estimated crop of Mr. H. L Hart, of Palatka, Fla., this year.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

PROGRESS IN FLORIDA.

Editor of The Rural Carolinian:

I have been a resident of Florida for twenty-two years, which period carries us back to the time when the first cabin was built in Ocala. In the whole State there were only a few scattered settlers. The change has been great since then; but I will not take up your space to review the past.

Our planters are alive to the great issues of the day, and are making strenuous efforts to meet the demand of the times.

You may now see the Brinley two-horse plough turning up the rich soil, hitherto undisturbed either by the plough or the rootlets of the grain. Subsoilers and fertilizers are also claiming the planter's attention, and the inventive talent of our people is wide awake.

A very ingenious ox-cart has been invented here by Dr. Butts, a citizen of Ocala. As a labor-saving vehicle, it is, perhaps, unequalled in the world, and if known would soon come into general use. The wheels are high and the body very low and convenient. A diagram with particulars will be sent to any subscriber of THE RURAL CAROLINIAN who may be interested in it, on application to Dr. Z. Butts, Ocala, Fla.

Sugar cane is going to be largely planted for the next crop. Hogs are now also receiving proper attention, and the best breeds being introduced, especially Essex and White Chester. We find it cheaper to raise than to buy bacon at present prices.

ANCLOTE.

Ocala, Fla.

WET RIVER BOTTOM LANDS.

Editor of The Rural Carolinian:

On my plantation on the Chattahoochee River are spots of land varying from one-eighth of an acre to five acres, of a stiff, heavy, black soil. These places are very hard to manage; in fact, I cannot get a crop on them more than once in five years, and the seasons must be very favorable—neither too wet or too dry. They must be broken deeply, cultivated deeply, and ploughed often. When I do get a crop it pays. Some of these places are so situated that they cannot be ditched. I have ditched some, and since then I am more successful in getting a crop; but such seasons as we have had this year, it is impossible to make a crop on the land.

How shall I manage such lands?

PLANTER.

Eufaula, Ala.

The indications here plainly point to *underdraining* as the remedy. If this is not practicable, open ditches will do much good, as our correspondent's experience seems to show. For places that cannot be ditched, we fear there is no cure. Can any reader tell him what is best to do with them.

A LIME AND SALT MIXTURE.

Editor of The Rural Carolinian:

Last summer I composted about two hundred tons of very rich earth, containing a large amount of vegetable matter with lime and salt. This compound I have denominated my lime and salt mixture As the season for its use is rapidly approaching, and having had no experience with such a compound, I am desirous of obtaining information from those who have experimented with it.

Will some of your correspondents tell me how much of this compost ought to be used in the drill per acre? How will it do to mix with this compost of cotton seed?

Will the lime set the ammonia in the cotton seed free?

J. T. G.

Muscogee Co., Ga., January 6, 1871.

BEES AND BEE HIVES.

Editor of The Rural Carolinian:

Bee keepers recommend Langstroth's Bee Hive as the simplest and best. Can THE RURAL tell us what is the pattern of the Langstroth Bee Hive? and what means are best calculated to induce the newly hatched swarms to pass into hives prepared for them, without exposing oneself to being stung by the bees? and oblige a SUBSCRIBER.

Abbeville, S. C.

We regret having no experience in bee keeping, and no acquaintance with the new patent hives. Will some correspondent give "Subscriber" the desired information?

SPONTANEOUS COMBUSTION.

Editor of The Rural Carolinian:

I notice in the *Boston Journal of Chemistry* a caution as to cotton seed in heaps. It is more than probable that some of the fires, supposed to be the work of incendiaries, are accidental—the result of spontaneous combustion. At any rate people who have quantities of the seed should be warned.

H.

AN EXPERIMENT WITH FERTILIZERS.

Editor of The Rural Carolinian:

By the direction of the Colleton Agricultural Society, at its meeting on the 2d day of January, I have been requested to prepare and forward to you the enclosed report of "Experiments with Fertilizers;" with the request that you will insert the same in the next number of your Magazine.

WM. STOKES.

Colleton Co., January 12, 1871.

The Committee on Cultivation, and Improved Fertilizers, having, in accordance with the request of the Society, procured small quantities of the fertilizers below named, through the kindness of parties in Charleston, representing the same; tested them on a piece of very poor, level sandy land, that had been under cultivation for a number of years, but on which compost had been pretty freely used each year, beg leave to submit the following as the result of their experiment:

	No. lbs. Fertilizer per acre.	No. lbs. 1st Picking.	No. lbs. 2d Picking.	No. lbs. 3d Picking.	No. lbs. 4th Picking.	No. lbs. 5th Picking.	Aggregate.
1. Wm. Critchton & Son, Ammo. Superphosphate Lime	668	42	122	340	46	9	559
2. Nothing		80	140	140	20	2	382
3. Carolina Fertilizer	668	240	248	356	100	10	954
4. Etiwan	666⅔	263¼	340¾	293	107	11	1015
5. Sardy's Phospho. Peruvian Guano	668	152	348	248	156	6	810
6. Nothing		60	130	140	70	2	402
7. Sardy's Ammo. Sol. Pacific Guano.	668	160	200	220	32	6	618
8. Cotton Food	668	348	352	270	100	7	1079
9. Nothing		75	80	140	70	2	367
10. Ammoniated Bones	668	168	260	220	100	6	754
11. E. Frank Coe's Fertilizer	6713-7	214½	257	157½	70	7	706
12. Nothing		60	90	150	80	2	382
13. Whann's Fertilizer	666⅔	243	267	193	83	6	792
14. Wilcox, Gibbs & Co., Guano, Salt and Plaster Compound	666⅔	216	231	284	100	6	837
15. Nothing		50	70	150	80	3	353
16. Wilcox, Gibbs & Co., Manipulated Guano	666⅔	216	228	233	83	6	766

The land selected for this purpose had been planted in cotton the previous year, with the rows three and a half feet apart; on the last of March; these rows were opened with a six inch turning plough to the depth of about three inches, and on the 14th April another furrow was run in the one previously opened, making a furrow about five or six inches deep. Not desiring to place the fertilizers so deep, a small turning plough was run on one side of this, filling it about two-thirds, on this the fertilizers were distributed at the rate of about twenty dollars per acre each, on the 14th April, and covered immediately by lapping two furrows on it with a turning plough, except No. 1, Crichton & Son, which was applied in the hill with the seed at the time of planting, at the suggestion of the party representing it. The seeds coming in contact with the fertilizer, were destroyed, and there was no stand on this slip until after it was planted over, after a heavy rain on the 25th May. The cotton was planted on the 21st April, when there was apparently sufficient moisture in the land to bring it up, but not more than a half stand was obtained from this planting, and owing to the protracted drouth, which lasted until the 25th May, some of that died out. A stand was not obtained until early in June, and the rust taking the cotton in August, it can be readily seen that the experiment was not a fair test of the merits of the different fertilizers, especially as it was a noticeable fact that those slips on which the best stand was obtained, from the first planting, invariably yielded the most.

The cultivation was done very thoroughly by running the sweep through, shallow and often, and following with the hoe.

A CASE OF RUST IN COTTON.

Editor of The Rural Carolinian:

Last February I fenced in a piece of branch bottom, (about nine acres,) that had been turned out several years. The soil is a sandy loam. The surface had become well set with a species of grass common to low land in this vicinity. I broke the land in March with short bulltongue; laid the land off three feet wide with a common shovel plough, following in same furrow with a Glove's plough, fourteen inches wide, sixteen inches long, drawn by two horses. Into this furrow, (the bottom of which was about eight inches below the level surface) I scattered a mixture of Soluble Pacific Guano, 200 pounds, Gypsum, 75 pounds, well mixed to the acre; bedded with a two horse twister, run close to the manured furrow, so as not to leave any unbroken ridge between.

I planted the cotton during the last days of April. By reason of a very dry spell, the seed did not come up for near a month. The Plants looked strong and healthy, and continued so until about the last of June, when I noticed some small black spots on a large portion of the leaves, which kept increasing until the leaves all become dead, by the first of August. The dryest sandy spots were the worst, the moist places showing very little of the blight.

The season (the last of May and first of June,) was rather wet, the crop was worked in the usual way, with shallow ploughing. The bolls stopped growing on the appearance of the blight and never got over half open, a large part dropping off. The yield was about 150 pounds to the acre of seed cotton, of such inferior lint that it was noticed by the merchant when sold. Did the land lack any constituent of plant food, or was the disease real rust? and would it be liable to be the same way again?

West Springs, S. C. C. S. GREENLEAF.

THE BEST WINTER SQUASHES.

Editor of The Rural Carolinian:

I see an inquiry in November number relative to winter squashes. I reside on the St. Mary's River, in Charlton Co., Ga., nearly in the same latitude with Jacksonville, Fla. I have planted the Winter Crookneck squash of several varieties: 1st, a variety of short, straight neck, yellow color, the largest weighing fifteen pounds. Seed obtained from Agricultural Department, Washington, D. C. 2d variety, long crookneck, with alternating longitudinal yellow and green streaks, the largest weighing fifteen pounds. Seed obtained from the same source.

These two varieties produce abundantly, keep through the winter, and are good in April. I have never seen a borer worm or squash maggot in either of these varieties.

I have tried the Yokohama, though not extensively. Its flavor is superior to the former, and so far as I have seen, it is free from destruction by the squash maggot. Lastly, I have tried the Hubbard—Buist's Improved Marrow—and the Turban, (fall squash,) but the sun is too hot for them, literally baking or blistering them, and the borer worm or squash maggot will destroy them *inevitably*. They are of *fine quality*, but cannot be made to pay here.

DR. F. M SMITH.

Traders Hill, Ga.

SEA ISLAND COTTON.

Editor of The Rural Carolinian:

As cotton forms a prominent feature of THE RURAL CAROLINIAN, the following account may interest THE RURAL readers:

I planted sea island cotton on one and three-eight acres of good and tolerably stiff clay loam, rather cold. It was late in the season before I obtained a stand. Manuring in spots, I applied two hundred pounds of phosphate, and one cartload of stable manure.

I gathered one thousand six hundred and twenty-five pounds of seed cotton, which yielded three hundred and ninety pounds of lint. It sold at seventy cents per pound.

The edges of this patch were inferior, large live oak trees growing on two sides, and I have no doubt the centre acre produced three hundred pounds of lint. O. J. H.

Todd, Wadmalaw, S. C.

EXPERIMENTS WITH FERTILIZERS.

Editor of The Rural Carolinian:

I give you below experiments with fertilizers, which you can publish if you wish. Four rows, 125 yards long each:

First Picking, October 17, 1870.

Zell's Superphosphate	67
Wando	44
Navassa	73

Second Picking, November 25, 1870.

Zell	34
Wando	39
Navassa	47

Third Picking, January 3, 1871.

Zell	17
Wando	21
Navassa	18

Total.

Zell	118
Wando	104
Navassa	138

Experiment No. 2, two rows, 125 yards,

First Picking, October 14, 1870.

Zell	19
No Guano	10

Second Picking, November 26, 1870.

Zell.....36
No Guano.....28

Total.

Zell.....55
No Guano.....38

Difference.....17

D. F. BARNETT.

Rock Hill, S. C.

A NEW PEPPER.

Editor of The Rural Carolinian:

I hand you herein a few pods of a new variety of *Capsicum.* I obtained one pod last winter, and the spring being unfavorable, raised but one plant. It has less bitterness, and is otherwise regarded superior to the more common varieties of Cayenne pepper. The common kind has stems and leaves light green, with peduncles and pods erect, or pointing zenith-ward. In this, the entire plant, leaves and young pods, are deep, dark green, peduncles long, and these with the pods pendant or pointing earth-ward. Pods taper from middle to both ends being elliptical in outline, while common taper from base to a more acute point.

D. L. PHARES.

Woodville, Miss.

FISH MANURE—OSIER WILLOW.

Editor of The Rural Carolinian:

Will you or some of your correspondents please inform me of the best mode of converting *fish* into a fertilizer, I have the means of obtaining large quantities of unsaleable fish, which I wish to turn to best account.

I have seen the Osier Willow spoken of as a hedge; do you know anything in regard to it in that capacity? Will it make a hedge and produce willow for market at same time?

WM. J. HART.

Palatka, Fla.

We have seen tolerable hedges of the Osier Willow on very moist ground, but have no experience in regard to them, or the value of the shoots trimmed off. Will some properly informed correspondent reply in regard to making a fertilizer of fish?

INQUIRIES AND ANSWERS.

Red Oats and Subsoiling.

I have received latterly numerous letters inquiring particularly about the *Red Oats.* One friend writes: "Send me a few seed by mail." I sent, and he says they are new to him, and intends trying them.

Another writes from West Texas: "What are the virtues of the Red Oat, of which you speak so favorably in an article extracted from THE RURAL CAROLINIAN, and published in several Tennessee papers."

Another writes: "I have been taught to look upon all patents with the same caution that an old rat is supposed to view a trap when he sees a young one trying a spring; just so with regard to the Red Oats, etc."

Another wishes to know: "Are you making money by farming? Do Red Oats pay? Would you recommend subsoiling on clay land?"

To answer these inquiries at full length would monopolize a number of THE RURAL. They can, however, be concisely replied to, and perhaps suffice for the present. I have scattered the Red Oat far and wide during the past two years, and only hope they may pay others as well as they do me. For several years I have urged the substitution of small grain for corn, as a general crop, on all upland throughout the cotton belt of the South. Each year's experience convinces me this advice should be heeded, and that the Red Oat is *the* grain to depend upon. This grain is heavier by five pounds than the standard weight of oats. It is prolific. The straw is small, tender, and, if properly handled, very nutritious. It does not grow tall. If sown in September, it makes an invaluable winter pasture for sheep and calves, and cannot be injured by the weather. Any land that will make ten bushels of corn will yield twenty bushels of Red Oats; the twenty bushels of oats will, at all seasons and under any kind of circumstances, feed a mule just as long as the ten bushels of corn, and keep them *fatter and in better health.* Let each planter count for himself the cost of growing the two. Red Oats are remunerative if sown as late as the last of March; but I have found those to pay best sown earliest.

The best crop I ever saw was sown the first week in October, in a cotton field. The cotton was picked over, and immediately "sided" with blunt scooters. The oats were then sown broadcast, and three similar furrows run in the middle. The oats came up as if drilled. In January the cotton stalks were knocked down, and by the 1st May the oats had lapped in the drill.

As to subsoiling, my experience teaches

me this: Any crop is benefitted by subsoiling just before planting on any kind of stiff land. Subsoil for wheat in October, and for cotton or corn in March and February. But to reverse this is labor lost. I have met advocates for November and December subsoiling for the succeeding cotton crop. Such work never paid me. Deep ploughing can injure no land; but unfortunately most of our planters begin to subsoil by *deep turning*, and not deep ploughing. Except in alluvial bottoms, no land in the South should be turned deeper than to cover the vegetable growth upon it. But every turning furrow should be deepened to subsoil, and thus benefit both land and crop.

The query: "Are you making money by farming?" provokes an article which must appear in a subsequent number.

D. W. A.

——N. N. L., Georgia. Thank you for your kind expressions in regard to THE RURAL CAROLINIAN. We shall, of course, be pleased to increase its circulation in your part of the State. We wish we could tell you "which is the *best fertilizer*" for your country, but we cannot. In the first place, we have tried but few of the many commercial manures in the market; secondly, our experiments have been on a soil differing widely from yours; and, thirdly, the experience of other parties, published at various times in the papers, is somewhat conflicting. We would recommend trying a number of them side by side, to ascertain which will do best on your soil. Our opinion, given on purely theoretical grounds, would be of little value. Chemistry is a science of the greatest use to man, but in its application to farming, it is yet in its infancy. We need experimental farms on which to put the theories of the chemists to the test of actual working agriculture.

——E. F. H., Live Oak, Fla. To grow *Lucern* with profit, your soil must be in good tilth and *heavily manured*. Spread stable manure broadcast, plough and cross-plough the land, then apply a top dressing of ground bones or superphosphate, (from two to three hundred pounds, or more, to the acre,) and harrow thoroughly. Sow in drills three feet apart, at the rate of from eight to ten pounds of seed to the acre. Work it with the cultivator, and hoe and keep the ground free from grass and weeds. The crop is not heavy the first season, and the plant does not attain its full maturity till the third year. It should be cut before growing too large, and cured like clover. Being a perennial, it requires no renewal for many years.

—— W. L. G., (P. 56, October number, 1870,) inquires how to make Scuppernong wine without sugar. Any kind of wine can be made and fully matured in two months by using R. d' Heureuse's Patent Air Treatment. The writer made Scuppernong and Muscadine wine this season by this process that received the highest premiums at the Georgia and South Carolina State Fairs. Full particulars may be had by addressing the undersigned at Covington, Ga. A. C. COOK.

——J. W. D. asks how many pounds of *red clover* seed to sow per acre, with oats. We have been accustomed to sow eight quarts per acre, which, we suppose would be about fifteen pounds. Some sow less but this is not too much.

——W. H., Alabama. We know of no work giving the instructions required for conducting the nursery business, but most works on Fruit Culture furnish the necessary information about grafting, budding, pruning, etc.

——Can you or any of your correspondents give any preventive or cure for the Cholera in Poultry? Two summers out of the past three, we have lost most of our poultry by this disease. R. C.

—— Dr. Moore says in Russia, in spring, one of the most beautiful plants of the season is a purple leaved Poplar, which he thinks is not known to arboriculture outside of that country.

—— The Southern States furnished their quota of pea-nuts last season as follows: Virginia, 400,000 bushels; Tennessee, 300,000 bushels, and Georgia and the Carolinas, from 153,000 to 2,000,000 bushels.

——Florida is flooded with people from the North, many of whom purpose to settle there.

——Jacksonville, with praiseworthy energy, is beginning to rebuild the places laid waste by the late fire.

LITERARY AND HOME DEPARTMENT.

THE MURILLO DE LA MERCED.

CHAPTER V.

That arch of Time's bridge where you, reader, and I last parted was 1833; this, where we meet again, is numbered 1850. My waistcoats now, measured round from the bottom button, are twice as capacious as at the top. It is seventeen years since I was freed from one enchantment, and fifteen years since I fell victim to another. My wife's name is Helen—Nelly in affection, when she is amiable and I in a mood to appreciate it. My eldest boy is at Rugby; and I hope he will prove himself worthy of all I have spent and am about to spend upon him. I mention these things, and, in addition, introduce the fact that there are six others, differing in gender, between him and baby—all pushing themselves up to that stand-point in life from whence, doubtless, they will assert similar claims—to show that there can be little of my early romance left in me: so little, in fact, that I believe I never once thought about that old pet adventure of mine from the time when, one evening, sitting beside my young wife, who was preparing for bed our little Charley—the Rugby boy now—and showing me how beautifully the cherub, supported under his arm-pits by her tender hands, could walk from her knee right up to her neck—I told her the whole story, my foolish feelings and all, upon the great principle that married folk should have no secrets—no, not in their hearts—from each other—till a little while ago, when the tide of concealment, which had remained at flood for twenty-seven years, ebbed suddenly away, and left my mystery stranded high and dry—its shabby tail exposed to open comparison with its awful head and its front of dreadful fascination.

The London season was just over, when I went with my wife on a visit to her father, the incumbent of a country parish far down in one of our south-western counties. He had lately been presented to his living, on the death of its previous occupier, by an old college friend, the Viscount Bricbrakmont, to, whom, when not much older than his pupil, he had been tutor. His lordship's seat was the show-place of the neighborhood for its magnificent gallery of old masters, his collection of prints, and objects of *vertu*. It had, besides, the further recommendation to the two old friends of being within a couple of miles of the Rectory. The Viscount, on the early death of his children, followed immediately by that of their mother, had found for his great sorrow distraction in making these collections. His having no near relations, and his being the possessor of enormous wealth, seemed justifications of an almost fabulous expenditure to gratify by acquisition these æsthetic tastes—the only ones out of which he had derived consolation, and which, under his bereavement, in the absence of all other objects of interest, had become in him, so to speak, intense passions.

As soon as the Rector came to his new living, the friends—both aged men now—resumed, to the manifest gratification of each, the habits of companionship which had been interrupted only by divergence of their paths in life when they left college for the great world. The leisure of each was spent with the other. The Rector, when he had time, went to "The Place;" the Viscount, when he had nothing to do, came to the Rectory. It thus happened that, the day after our arrival, at luncheon, we had the honor of being presented to his lordship. And it also happened that his lordship, who talked incessantly—in that charming anecdotal way which, I am afraid, we must reckon now among the lost arts—had so much burdening his mind, unsaid, about pictures, artists, and connoisseurs, that he accepted with avidity an invitation to return to dinner, "that he might," as he assured his hostess, "in addition to the usual *agrëmens* of her table, enjoy the delightful conversation of her guest."

At and after dinner his lordship's flow of anecdote was unebbing. He had great pride in his success as a collector. Many of his best stories were of the way in which he himself, or some other enthusiast, had hit the scent of some *chef-d'œuvre*, had followed it up, and eventually run it down. He introduced one such by asking me if I had known the late Baron Mordecai.

"I have seen him often," I replied, "but had no acquaintance with him."

"Ah, I who knew him, regret, for your sake, your not having known him. He was one of the most extraordinary men I ever met—a Napoleon in his way. All the qualities out of which greatness is made he possessed—acuteness, energy, decision, unflinching perseverence. His knowledge of the old masters surpassed that of any other living man. We owe to him the recovery of many lost pictures, some of the finest that have ever been painted—as for instance, the great Murillo in my collection; I obtained it of him."

"Indeed!"

"Yes; I'll tell you all about it. It was formerly in the *sacristia* of the Convento de la Merced at Seville, but disappeared in 1811,

during the French occupation under Soult. It was supposed to have been carried with the other art-treasures of Spain to France. But remark!—it never turned up at Paris; and the walls of the Louvre were innocent of being the receivers of, at least, that particular piece of sto—; well, spoil. To those who knew the work it was always a subject of profound regret that such a masterpiece of Murillo should be, as so many other great creations of genius were, lost to the world, through the barbarous rapacity of Bonaparte and his generals. No man could entertain deeper feelings upon the subject than Baron Mordecai. When I first knew him, early in 1828, his indignation was as vehement and his grief as acute as if the spoliation and the loss, instead of happening so many years before, had but just occurred, and effected himself personally. But these feelings probably originated in the circumstance, as he told me, of his having come, while in Spain, from whence he was but just returned, upon traces of three or four pictures, and deluding himself for a considerable time with ecstatic hopes that among them was this identical lost 'Murillo de la Merced.' These traces began in his obtaining a unique, but unfortunately mutilated, etching of the missing picture, and the being assured that in the set of paintings he had mentioned, and which was in the possession of certain parties at Cordova, would be found the original. It was like the man to rush off at once to Cordova, but he arrived there only to encounter a blank disappointment. Of pictures he could hear nothing; and the persons to whom he was directed had gone away, no one knew where, years before. Such was exactly the position for Baron Mordecai's fine qualities to come out to the front. Any one else but he would have abandoned the pursuit; but having reason, as he supposed, to rely upon the information he had received, he became the more determined. Himself obliged to return to England, before leaving Spain he set agencies at work to discover the lost track, which extended operations even to Russia and America.

"A few months subsequently, when his late acquisitions arrived from abroad, he showed me the etching of the lost gem. I had all along felt a real sympathy with him and his object; but now, when I saw this, so to call it, promisory note of the priceless hidden treasure, I confess my interest in its discovery sharpened into an eagerness quite as keen as his own. For three long years, though several times our hopes were greatly excited by intelligence from his agents abroad, or by his own exertions in following up some fancied clue, of which he always wrote me the details, we arrived at nothing but disappointment.

"At length, however, in the summer of '26, a letter came from Gibraltar, informing the Baron that there had been found at Ossuña some paintings certainly brought there a long time before from Cordova, which in many particulars corresponded to those he was in search of. They were at once secured by his agent, who had, moreover, succeeded in getting them down to the frontier, and smuggling them across the lines of San Roche into Gibraltar, whence at the first opportunity, they would be despatched to London.

"These were not the times of regular steam communication by which we could, as now, calculate almost to an hour when our suspense would be relieved. I dare say you would all laugh at us if I were to describe the worse than fidgety state of excitement we were in; and how day by day it grew more exasperating; and how—when at last the vessel arrived and unloaded, and the case of pictures, cleared at the custom-house, was put into a cart, with the Baron's own servant as a guard—we ordered our carriage to move close behind it, that we might never lose sight of the precious box; and how, when we got it home, although the Baron's assistants—any number of times more expert—were standing there all ready, yet we must take mallets and chissels, and ourselves pry off the lid, and drag forth to light the expected long-lost treasure. Well, you are kind enough not to laugh; but I, one of the actors in that scene, cannot help doing so now, although at the time I felt almost as much as the Baron, who actually cried with rage and disappointment when he took from the case the last of the four pictures it contained—all of a quality, 'such as,' the Baron said, throwing his mallet at them, 'I could fill Grosvenor Square with for two Guineas apiece.' Thus ended our hopes, and with them all further efforts on our parts, to find the great 'Murillo de la Merced;'—but there is a finish to the story!

"As he almost always had some picture of mine to restore, and I took vast interest in the process, I got into a habit of spending a great deal of my leisure in the Baron's atelier. It was about two years after our Murillo disappointment that two pictures in his possession attracted my notice. Upon inquiry, I was astonished to learn that they belonged to those we had, in our aggravation, so hastily condemned. The Baron candidly admitted that the unexpected defeat to his hopes had made him unjust to their merit. Having thrown them aside as worthless, he had refrained, till a little while before, from looking at them again; but upon a calmer investigation, he had discovered that, though by no means of the highest class, they were well worth the pains of restoration. He only hoped the others would turn out as well—they were in hand—his assistant there was at work on one of them now. At that moment this very assistant, rubbing away at the

picture indicated, uttered a sudden cry, actually with something so like horror in its tone as to greatly startle us both. At a glance we discovered the cause of his fright. An angular piece of color, as large as a crown-piece, had broken bodily away from the painting under his fingers. It was perhaps well that I was present, or I fear Baron Mordecai would not have restrained himself to the epithets and expletives he hurled at the poor fellow's head. The man wisely rushed from his master's presence, and vanished. It was some time before the Baron recovered temper enough to scrutinise coolly the injury done.

"'Mein himmel!' he exclaimed in his native German, as he did so, 'what is here? It is all loose—see!' He was dabbing the surface near the hole with his fingers. 'How—what is this? Ach, Gott!' He uttered a cry, as his man had done; for, as he pressed, another flake larger than the former fractured off. As if struck with a sudden thought, he stood for a moment to consider; then, in positively a frantic manner, after glaring at and tossing right and left the tools near him, he began shouting, 'Hi! hi! hi! Come here instantly—hi there! Here, come here! Ach!' he went on as the frightened face of his workman appeared at the door, 'bring a paper-knife—your mistress—ask her for her's. And, hi!—some hot water in a bucket; and, ha!—a sponge—a large one. Quick—make haste—hi! this moment!' 'Gott in himmel!' I heard him say to himself, as he pressed his hand to his forehead.

"I really feared his reason was upset. My presence seemed quite forgotten. After a moment he bent down over the fracture, and began rubbing with his forefinger in the hole, muttering all the while to himself something, of which I could only make out detached phrases.

"'They often did it—they have done it very often. No concealment so sure! Mein himmel! No way so safe!—covered—hid in this way—why *I* never guessed it. If—if only—if it should—Gott!—a million!—worth a million! I—I—I beg your pardon, my lord,' he said, recovering himself, and looking round confusedly, as his assistant brought him a paper-knife and a large bowl of hot water. 'I pray forgive me. I forgot everything but this; what do you imagine I think it is?'

"'I cannot guess, of course.'

"'I think it is a picture *in tempera*, painted over another picture—and if so, a fine one be sure—to hide it. It has been done many times, especially in Spain. What—what if?—nonsense though!—but if? Ah, I don't dare hope that—but—I will soon see.'

"He appeared to nerve himself as a surgeon does who is about to perform a difficult operation. Indeed he looked not unlike one as, tucking up his sleeves and steadying his hand, he proceeded cautiously to insert the blade of the knife under the edge of the fractured color. It peeled up bit by bit. Then he applied the sponge and washed the surface—for there was another surface below—and it revealed brilliant color. He seemed not able to control himself, but burst out in a short triumphant sort of shout. Again, setting his teeth and compressing his lips, he worked on with knife and sponge; while I, breathless and excited to positive pain, stood by watching the progress he made, till, piece by piece, in little or large flakes, the whole of the superincumbent painting *in tempera* lay like broken plaster on the floor; and fresh, vivid, in all its glorious harmony of color, design, expression, Murillo's greatest, matchless picture was revealed to us perfect as the day he painted it."

"Grand! grand!" I exclaimed. "And it is now in your lordship's possession?"

"It was long, though, before I could induce Baron Mordecai to part with it. I obtained it at last as a favor for thirteen thousand guineas. He parted with it with very great reluctance; and three months after wanted it back for fifteen thousand. When I refused, he bid again and again up to twenty thousand; he wanted to take it to St. Petersburg. Of course no money could buy it—no amount of money. When will you come and see it?"

"Your lordship is very kind—when shall you be at leisure?"

"I? Oh, whenever you will come. In the morning? say, early in the morning; and we can have a long gossip about that and the other things I have got together. And, madam," he said, addressing my gracious mother-in-law, "perhaps you, and all of your's here, will do me the honor to come to luncheon?"

So it was arranged.

I found his lordship next morning pacing the terrace in front of the house eagerly expecting me. He at once led the way to his gallery. There are few things I more delight in than wandering through a collection pausing here; glancing there; studying—carefully the handling of this master; dodging to get the right point of view, to take in all the effect of that; but, mind you, by myself. There are few things I find more wearisome than being led up to one *chef-d' œuvre;* stationed "just here" to look at a second; dragged away "to tell an opinion" of a third, or to extol "the fine quality of breadth" in a fourth, and—of all objectionable *ciceroni*—by the *dilettante* proprietor himself. He always has in his own mind, with regard to every one of them, foregone conclusions, against which the expression of an independent opinion is nearly sure to clash,

and offend, as well, his *amour propre*. Hour after hour was I subjected to such a purgatory on this occasion. Not but that his lordship's collection was really a good one, not but that his lordship was a most delightful guide through it, but—"he was monarch of all I surveyed." Inevitably, under such a condition, the power of ownership makes itself felt, if not expressed; submission seems expected, if not demanded; and admiration is called for as a tax imposed, instead of being yielded of free-will to merit for itself.

By the time we had made the circuit of the great gallery, I was so thoroughly jaded that I should have hailed as the greatest relief the appearance of the party from the Rectory, or the sound of the luncheon-bell; but no, there was yet more to see—the Viscount's cabinet of gems and the Murillo.

"It is here," his lordship said, pausing and playing with the handle of the door before he opened it. "I built this room on purpose for it. If I were Aladdin, the genius should construct a palace on purpose, and my Murillo should occupy the place of the Roc's egg. Enter."

I entered. There was but one picture on the walls. Placed opposite to it, at the best point of view, was a *fauteuil* The Viscount followed me close, as I advanced to the front. Whether he expected me to utter an exclamtory shout of delight, or pour out broken expressions of rapture, or make any other exhibition of intense feeling, I know not. Apparently he quite approved of the effect the first glance of the picture produced upon me, which was, simply, causing me to sink down overpowered, upon the seat so happily placed for one in my condition.

"Ah!" he exclaimed ecstatically, patting me on the shoulder; "I see—I see! I expected no less. I will leave you to yourself. There are states of pleasure when the presence of another is an intrusion, as much as it is in certain states of grief. You will find me in the gallery."

I am afraid I stared wildly at his lordship as he receded on tiptoe through the door, and then stared no less wildly at the picture before me.

As I live, it was my own painting of Sasome and John the Baptist's head!

Beneath it, framed and glazed, hung the etching that the Viscount had mentioned, fully lettered.

"'Pintado por Murillo.' "Grabado por Juan Ant°. Salvador Carmona." "El Quadro original existe en la Sacrista del Convento de la Merced, en Sevilla."

I knew the name of Carmona as being the engraver of many of Murillo's pictures. The paper on which it was printed, like the painting, had been made to undergo processes that had given to both the aspect and mellowness of age.

My life has been so on one side of the wicked world—so apart from, so unreached by, its knaveries, cunnings, and frauds—that all my notions of villany are ideal rather than real. Perhaps, too, I am what nowadays is expressively called "jolly green"—meaning, I take it, slow at suspicion; but I could not sit there looking at my own handiwork, with the Viscount's narrative fresh in my mind, and for one moment doubt that he had been made the victim of a cool, calculating, deliberately contrived, marvellously worked-out, gigantic swindle.

In the time I had for reflection, I could only arrive at a settled conviction of the fact, and at two resolutions: the first one being, to keep for the present my own counsel; the next, not to rest till I had found out the mystery of that blood-drained head; for all the horrible ideas connected with it were now rendered a hundredfold more cogent by my reflections suggesting, that those who had so little hesitation in employing all means needful for or accessory to their purpose, could have had no scruple in resorting even to murder.

When I rejoined the Viscount I had little difficulty in avoiding discussion, simply by looking intelligent and assentive; while he poured forth his own inexhaustible rapture of admiration of the work, and exultation at being its possessor. The next day I went back to London.

[*To be concluded in our next.*]

OYSTERS AND SHRIMPS.

In response to your call for recipes for cooking oysters, I send you one that we use almost every day during the season. 1st. Not knowing how to open the oysters raw, instead they are put into a small tub and boiling water poured over them, which, without scalding them too much, renders them easily opened. 2d To one quart oysters drained of their liquor, take half pint of milk, one tablespoonful of cream, one of butter, and one dessert spoonful of flour; rub the flour smoothly with the cream and a small quantity of the oyster liquor; put the milk on the fire and when it boils add the cream and flour, with such seasoning as may be preferred,(we use black and red pepper with a sprig of parsley and some skellions cut fine,) then add the oysters and let them remain in the boiling mixture until they acquire a plump appearance; the sauce is excellent with hominy, rice, breads, and vegetables; to dress oysters with cream, the only difference is to put no milk

but more cream, and cook the oysters more. This is a very rich and rather indigestable dish; I dare rarely eat it.

To make oyster soup, take a quart of milk, to the quart of oysters, season to taste and add a little flour, and when the milk boils throw in the oysters.

SCALLOPED OYSTERS.

For a quart of oysters take a half loaf of bread, quarter pound of butter, pepper and alspice to taste; cover the bottom of a suitable saucepan with part of the bread broken into small pieces, then add a layer of the oysters, previously mixed with the butter and seasoning; put another layer of bread, then another of the oysters, finishing with pieces of bread laid rather thick on the top; bake for twenty minutes in a quick oven.

While I am about it I will give you all the recipes that I think of just now.

TO PICKLE SHRIMPS.

Take any desired quantity of acetic acid and add to it the spices, etc., desired to season four times as much vinegar and allow all to macerate together for several days. When the shrimps are ready for pickling add three parts of water, boiled, (rain is best) to each of acetic acid; put the shrimps in the jars, not packing too full, and cover with this vinegar. Let them remain in this vinegar for several days then taste the vinegar and if it is too weak, pour it all off, add more acetic acid to it until it is strong enough, then pour back and seal. For sealing common jars I use stout brown paper, paint one side with gum shellac, dissolved in alcohol, put it immediately, before dry, over the jar, tie down, then paint over the outside in the same way, only twice instead of once, to be sure of excluding all air.

Good vinegar for making pickles is also made in this way and of the same strength for those put up in the summer, while for those put up in the winter four or five parts of water, instead of three, might safely be used.

By the bye, will not some one give us in your journal the natural history of the oyster, clam, mussels, hardback shrimp and prawn? and how to plant oysters for breeding, and how to breed them. "*Rusticus sum et nihil Rusticum mihi alienum Puto.*" * *

RAISED GRAHAM BREAD, ETC.

In answer to "Mrs. E. M. A." who asks for directions for making Graham bread, I will give my way: I take a quart of Graham flour, two teaspoonfuls of "Sea Foam Baking Powder," half a teaspoonful of salt; stir well before wetting, to mix the powder and salt thoroughly through the flour; then I put in half a tea-cupful of molasses, and a pint of cold water, and stir it all thoroughly with the spoon, and put it in a thoroughly greased baking pan, and into a hot oven immediately. I have made it with yeast by mixing it early in the morning and using water a little more than luke warm, and putting it in a warm place to rise, but found the baking powder better. I have used "Dr. Price's," the "Royal Baking," and "Sea Foam." I like the "Sea Foam" best.

A GOOD BREAKFAST DISH,

Here is an excellent Breakfast Dish, found in some paper, which is easy and quick to prepare:

Four eggs, three quarters of a pint of new milk, and a piece of butter the size of a walnut; salt(and pepper if you like it,)to suit the taste. Beat the eggs, add the milk and butter, and pour all together into a hot frying-pan containing half a spoonful of lard or fryings. Stir constantly for three or four minutes, when it will be ready for the table.

Here is a favorite dish of ours:

A NICE APPLE PUDDING.

Take four sliced apples, cooked till soft, in a cupful of water. Make a batter of two eggs and four table-spoonfuls of flour; beat well, then add a pint of milk, and three table-spoonfuls of sugar, and a little salt. When the apples are cooked soft, take them from the fire and pour this batter over them, stirring all together; then grate nutmegs over the top and put a lump of butter in the center. Bake a light brown. It is to be eaten with cold milk.

Perhaps the foregoing is enough for once, but here is something so very excellent that I want all our RURAL house-keepers to try it. It is not original.

A DELICIOUS CREAM PIE.

"FOR THE CAKE—Two eggs, one cup sugar, one-half cup butter, well beaten; add one teaspoon cream tartar, and one-half teaspoon-

ful of soda with flour enough to mix, rather thin; bake in two round pie tins.

FOR THE CREAM OR CUSTARD.—Boil a pint of milk; beat well two eggs, one-half cup of sugar, one-half cup of flour, and stir into the milk when boiling; when cool add lemon or vanilla to suit the taste; split each cake and spread thickly with the cream, then carefully replace.

Now have I not done *my* duty according to Mrs. "E. M. A.'s" suggestion, and will she not give us more "Household Notes."

MRS. MARIE E.

CURE FOR MANGE IN DOGS.

Take equal quantities of lard, sulphur, spirits turpentine, and soft soap; mix all thoroughly together, and rub the dog well with the mixture; the next day wash him clean, taking care not to chill him, and repeat the application. One application will often cure if used as soon as the disease appears. If soft soap cannot be procured, the common yellow family soap will answer. F.

A STORY WITH A MORAL.

The far-famed Bakewell, of Dishley, Leicester, England, the founder of the new Leicester sheep, and the man who lived a century before his day, used to tell an anecdote with exceeding high glee of a farmer of the olden school and golden times. This farmer, who owned and occupied 1,000 acres of clay land, but poor in point of money, had three daughters looking their father very hard in the face for money. He went to Bakewell to know what to do for them. Bakewell told him to keep his money and give each daughter some land, and make it known that he would do so, and he would very soon lessen his family at home.

He then made it known that he would give his eldest daughter 250 acres of land. It need hardly be added that the lady had forthwith plenty of beaux to choose from. The father's house was haunted with young men, and she soon was married, and the father gave her the portion he had promised, but no money; and he found that by a little more speed and better management the produce of his farm increased.

Three years after, he made it known that he would give his second daughter 250 acres of land, which drew shoals of beaux, and she soon got married, and the father gave her her portion. He then set to work, and begun to grub his furze and fern, and ploughed up some of his poor furze land—nay, and where the furze covered in some cases nearly half the land. After giving half his land away to two of his daughters, he found the produce of his farm increased, because his newly broken up lands brought him excessive crops. At the same time he farmed the whole of his land better, for he employed four times the labor upon it; had no more dead fallows the third year; instead of which he grew two green crops in one year, and ate them upon the land.

A garden, Bakewell told him, never required a dead fallow. He no more folded from a poor grass close to better the condition of a poor ploughed one. But the great advantage was, that he had got the same money to manage 500 acres as he had at first to manage 1,000 acres. Three years after the second marriage, he made it known that he would give his third and last daughter 250 acres of land. She soon had a beau in readiness, and three or four more within call, and she was married within a week. She thought it never too soon to do well, and the father portioned her off with land.

He then began to ask himself a few questions how he was to make as much off of 250 acres of land as he had done off of 1,000 acres. He found that necessity was the mother of invention. He then paid off the baliff, who weighed 20 stone; he found that he had been helping the men to manage the master, instead of helping the master to manage the men. He then rose with the lark in the long days, and went to bed with the lamb. He got much more work done for his money, for instead of saying to the men, "Go and do it," he said, "Come, my boys, let us go and do it." He found a great difference between "come" and "go." He made his servants, laborers and horses move faster—he broke them from their snail's pace; he found that the eye of the master quickened the pace of the servant. He grubbed up every bit of furze on the farm, and converted a great deal of corn into meat. He preserved the black water, the essence of the manure, and conveyed it upon the land. He cut down all of his high hedges, straightened his zig-zag fences, cut his serpentine water courses straight, and gained much land by so doing; made dams and sluices, and irrigated all the land he could. Some of his hedges and borders were covered with bushes from ten to fourteen yards in width, and some of his closes were no wider than streets; and there he grubbed up the hedges and borders, and threw several little closes into one. He found that instead of growing white thorn hedges and haws to feed foreign migratory birds in winter, he ought to grow food for man.

"I sold him long-horned bulls," said Bakewell, "and told him the value of labor, and what ought to be performed by a certain number of men, worked oxen or horses within a given time. I taught him to sow

less, and plough deeper and better, and that there were limits and measures to all things; but, above all, the husbandman ought to be stronger than the farm. I taught him how to make hot land colder, and cold land hotter; light land stiff, and stiff land lighter. I advised him to breed no inferior cattle, sheep or horses, but the best of every kind, as the best consumed no more food than the worst. Size has nothing to do with profit. It is not what an animal makes so much, as what it costs making."

The farmer became a new man in his old age, and died rich, by adopting Bakewell's improved management.

HYGENIC FALLACIES.

A fallacy in regard to diet is to suppose that the natural appetite is not the best guide as to the quantity and quality of our food.

It is true that the appetite does sometimes become perverted. It is true that it does become sometimes a symptom of disease. But these cases are exceptional.

Hideous doctrines have been taught on this subject. We have been solemnly told to rise from the table as hungry as when we sat down. We have been told to be always ready for a meal—in other words, to live in a state of perpetual hunger. We have been told to eat those things that we most hate, and to avoid those we most like—that to have a longing for any article is the very reason why we should be denied it.

These doctrines are monstrous. They are unworthy of the nineteenth century. They are a libel on the Creator who gave us taste and appetite, in order that we might know what to eat and drink, and gave us also judgment to direct appetite and taste when the system becomes diseased.

The practice of weighing the food, which was introduced to the world by the examples and teaching of Cornaro, the Italian, cannot be too strongly reprobated. It is impossible for scales to tell how much to eat. The quantity of food that we need depends on the amount of labor that we do, on the nature of the constitution, on our mental mood, and on the quality and variety of the food which is served.

To weigh or measure the food habitually is not only silly, unnecessary, and useless; it is actually a crime. It wastes valuable hours that should be better employed. It makes us miserable, and that fact alone is argument enough against it. It brings indigestion and all other woes, and therefore prevents us from getting the best advantage of what we eat.

Still another common fallacy is, that brain-workers need less nutriment than those who live by their muscles.

This idea would never have been entertained if the people had depended on their own observations and experience. But we have been influenced by false teachings and erroneous theories.

Any one who has attended associations of clergymen, or allumni meetings, or has boarded with students, has had an opportunity to see that brain-workers are large eaters, as they should be if they are really hard workers. The changes of tissue in the brain, that take place during study and thought, are very important and very rapid, and must be replaced by abundant food.—*Appletons' Journal.*

DIET AND CIVILIZATION.

The value of fish, and in particular of the hard and sweet varieties of fish, such as in trout and shad, is of great importance, for it furnishes in the phosphorus the elements of brain-food, now become an absolute necessity in the advanced intellectual development of our people. The truth is, and it is only becoming to be appreciated, that social and intellectual progress are based upon varied and abundant supplies of food; and it may be stated as a law, that there will never be any high civilization where the diet of a people is limited to a few kinds of staple food, no matter how favorable these may be for establishing what is called a condition free from disease. From this it is evident that the rice diet of the people of eastern Asia, and the limited elements contained in the acrid food of the people of the tropics, will not permit any of these nations to rise above the barbaric.

After Dinner Naps.—Many persons are in the habit of sleeping half an hour or hour immediately after dinner. This is a bad practice. Ten minutes' sleep before dinner is worth more than an hour after. It rests and refreshes and prepares the system for vigorous digestion. If sleep is taken after dinner, it should be in a sitting posture, as the horizontal position is unfavorable to healthy digestion. Let those who need rest and sleep through the day, take it before dinner, instead of after, and they will soon find that they will feel better, and that their digestion will improve thereby.—*Herald of Health.*

To Clean Lamp Chimneys.—Most people in cleaning lamp chimneys, either use a brush made of bristles twisted into a wire, or a rag on the point of scissors. Both of these are bad; for without great care, the wire, or scissors will scratch the glass as a diamond does, which, under the expansive power of heat, soon breaks, as all scratched glass will. If you want a neat little thing that costs nothing, and will save half your glass, tie a piece of soft sponge the size of your chimney to a pine stick.

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WALKER, EVANS & COGSWELL,
Charleston, S. C.

FARM AND GARDEN CALENDER FOR FEBRUARY.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance North or South of this place must make the necessary allowances for difference in the seasons.

AGRICULTURAL OPERATIONS.

The work of preparation for planting should be vigorously pushed, wherever the conditions of climate and soil permit, and let it be more thoroughly done than ever before. The better the winter's work is done, the lighter will be that of the spring and summer.

——Corn will be planted during this month in Florida, and elsewhere within the southern limits of our extensive parish, but too early planting, further North, should be avoided. Let the work of preparing for this crop be pushed forward, however, at all points.

——A good deal but not too much, has been said in our pages in favor of *oats* as a profitable farm crop. This grain is not so particular in regard to soil as many others; but it must not be too wet. The land intended for spring oats should have been ploughed early in the winter, and cross-ploughed before sowing. The early breaking up, however, is not essential. Farmers differ somewhat in regard to the best time to sow oats, and the time must, of course, vary with the soil and season, as well as with the latitude. In this region (Charleston and southward)we should sow during the present month, if the land be not too wet, but March will not be too late, if you can not get them in sooner.

——Ditching and draining, where not already completed, may still go on, and too much of this work can hardly be done on most of our plantations.

GARDEN WORK.

Continue to plant *garden peas*, but in this latitude they will not be likely to do so well as those put in last month. A little further North, this is a good time to plant for the main crop. Hoe frequently those that are advanced, and set sticks for their support. Even the dwarfest kinds do better in that way.

——*Irish potatoes*, if not already planted, should be put in at once. Choose, if possible, a good black, moist, but not wet soil, and manure liberally, avoiding, however, too much crude stable manure if you desire tubers of the best quality. Wood ashes, chip manure, rotten saw-dust, and the scrapings of the house-yard are excellent for this crop.

—— Beets, Carrots and Parsnips may be put in for a full crop (in this latitude) from the middle to the last of this month; also Salsify, Swiss Chard, Cress, Mustard, Kohl Rabi, etc.

—— Lettuce, Radishes and Turnips for a succession may be put in any time during the month.

—— Sugar Corn may be tried toward the last of the month, but the main crop should be deferred till March.

—— Cabbage Plants should be set out at various times during the month; and, as they begin to grow, the soil should be frequently stirred.

—— Tomatoes and other tender plants may be started in a hot-bed or a cold frame.

—— Strawberry beds, if not already attended to, should have a dressing of manure and a careful working with a fork or a pronged hoe.

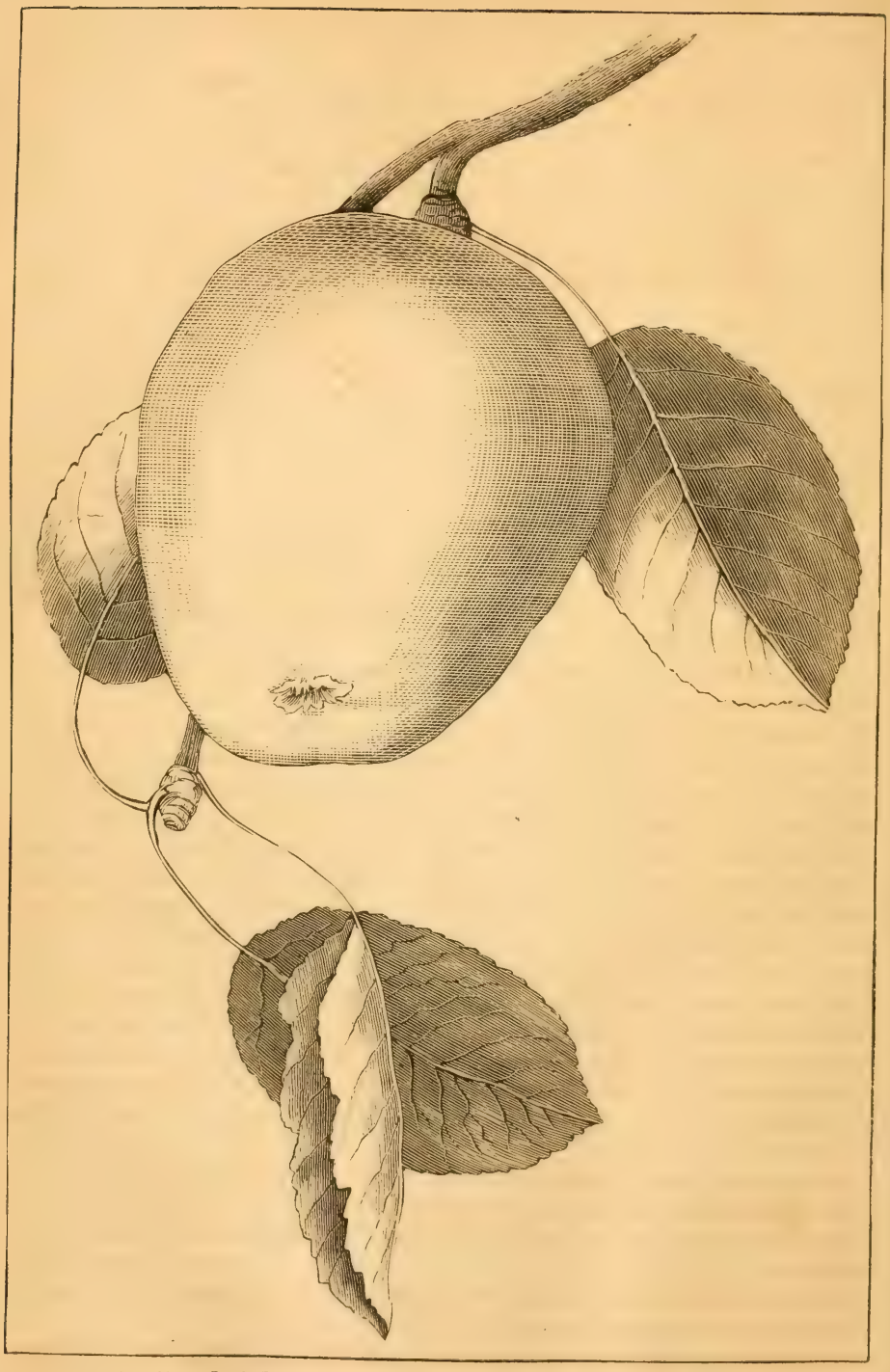
——Cuttings of Roses and evergreen plants should now be set out; also cutting of geraniums and other greenhouse plants.

—— Pinks and Sweet Williams may have their roots divided and transplanted.

—— Asters, Stocks, and other favorite annual plants may be sown as the weather gets warm.

—— The flower garden soil should not be too rich, but must be thoroughly pulverized.

—— If insects trouble you in the garden, or elsewhere, send specimens to our entomologist, Mr. Doge, with notes of inquiry or information.



Carolina Red June Apple.—Engraved for the Rural Carolinian.

THE

RURAL CAROLINIAN.

Vol. II.] MARCH, 1871. [No. VI.

Fertilizers—A Letter to Dr. Edward B. Smith.

ETIWAN WORKS,
CHARLESTON, February 2, 1871.

Dr. Ed. B. Smith, Marion, S. C.

DEAR SIR: Every manufacturer of fertilizers is indebted to you for your well conducted experiments reported in THE RURAL CAROLINIAN of February. In manufacturing the Etiwans, we desire to produce as complete a fertilizer as possible; and the details of your experiments will materially assist us. We find that your experience corresponds with the deductions of our chemist, and had you known that the Etiwan No. 2 contains the mixture with Peruvian Guano and Muriate of Potash, which your experiment has proved to be the most successful, you would have been able to find at hand, the very fertilizer which was wanted. Heretofore, we have offered in market Etiwan Nos. 1 and 2—the former as you justly say without ammonia; the latter being a mixture of the No. 1 with Peruvian Guano and Potash Salts.

We have found that these two Guanos with the same name caused confusion, we have, therefore, continued the name Etiwan only for that which was sold as No. 2; and the other is offered at a lower price than the Etiwan, under the commercial name of Dissolved Bone. This difference in price is produced by the absence of the Peruvian Guano and Potash Salts contained in the Etiwan.

Your experiments have settled two important points upon which our inferences have been verified by your experience:

1. That a high grade of Soluble Phosphate is the most essential element in a fertilizer.

2. That one-half the quantity of a fertilizer of a high grade, will go as far as double the quantity of a low.

Our Company has, therefore, insisted on as high a grade as from eighteen to twenty per cent., both for its Dissolved Bone and for its Acid Phosphate.

If the planter sees fit to apply either of these alone to his crop, he saves one-half the quantity by purchasing this high grade, and if he makes a compost, he has a large margin for foreign material. Thus, for instance, should he compost with cotton-seed for the purpose of supplying ammonia, inasmuch as only three per cent. of the cotton-seed is available for this purpose, the remaining ninety-seven per cent. must reduce by nearly one-half the grade of the mixture. Hence, if the acid compost, as it comes from the manufacturer, contains twenty per cent. of soluble phosphate, the mixture will be as high as ten per cent., while if the original grade be only eight or ten per cent., the mixture to be used for the crop, will only contain four or five per cent. soluble phosphate. Your second fact would now become operative, and the planter would have to double the quantity of his manure to obtain the same result as in the first case.

There is another fact which in this connection, it would be well to bring to the attention of a careful observer like yourself. It is that in super-phosphate fertilizers of high grade, there exists phosphoric acid in a free state, and when placed in the soil, it will seize on materials contained therein, and render soluble some of the essential elements. Thus, in clay soils, the silicic acid would be displaced and the potash entering into combination with the phosphoric acid, would become soluble as phosphate of potash.

There are two other matters mentioned in your experiments of very great interest, to which we would renew your attention: first, as to the effect of fertilizers on rust; second, as to dispensing with some particular ingredient which the soil may supply.

1. Upon the first point, you remark, "that by the combination of Peruvian Guano, Etiwan No. 1, potash and soda, not only was the crop increased considerably over other fertilizers, but what is more important still, there was no rust where this combination was applied, which was on two separate fields distant apart, and where I had more rust than on any other portion of the farm." Now, it is a most important enquiry to ascertain to which of these ingredients this excellent result is due. Our Etiwan being manufactured with those precise ingredients recommended in your letter, would enable you to repeat the experiment without difficulty, and the result reported by you as to the superior product of cotton on your land by Etiwan No. 1 over Peruvian Guano, would seem to prove that your soil in some way furnishes ammonia, and thus might save you a very expensive ingredient.

2. And this opens the second subject. If you will refer to the pamphlet circular issued by our Company, you will see there detailed from Professor Ville's experiments, a mode of ascertaining what elements are in the soil and what it wants. If there should be any ingredient in the soil of Marion, which would supply nitrogen, it would be a most valuable fact to know; or if (as from one of your experiments it seems likely) there should be some compound of potash which these manures may disengage, it would be well worth knowing.

Allow me in conclusion to bring one fact more to your notice, which may

account somewhat for the improvement of soil to which you allude in subsequent years from the use of our native phosphatic manures.

The reduction of the phosphate of lime contained in our phosphatic rocks by sulphuric acid, results in two combinations, one in releasing the phosphoric acid and thereby making a soluble superphosphate; the other in combining the sulphuric acid with the lime which has been released and thus making sulphate of lime or gypsum. The residue, therefore, of a fertilizer, manufactured from Carolina phosphates, by means of large portions of sulphuric acid over and above the superphosphate, consists of an excellent manure, which from year to year becomes disintegrated, combines with the soil, and renders it permanently more productive.

With these explanations before you, we trust that you will continue your well conducted experiments for at least another year, and acquaint the public with the results. We would very cordially offer to supply you with our material for experiment; but, in that case, it might be objected that the material was selected and might not be a just average sample. So, that the better plan is certainly, that which you seem to have pursued, of taking your own samples from the general market.

With much respect, your obedient servant,

C. G. MEMMINGER.

President of the Sulphuric Acid and Superphosphate Company.

Does Farming Pay in the South?

"Have you made money by farming since the war?" This is a pertinent question, that is best answered by narrating experience.

If by "making money" is meant hoarding greenbacks or coin, I unhesitatingly answer, no. I feel that my income from my agricultural labors since 1865 have exceeded my necessary expenditures, but I have "laid up" nothing, and for this simple reason: I am on the other side of half the age allotted to man here below, and, while I do not advocate fully the Latin maxim, *dum vivimus vivamus,* I hold to the opinion the laborer should enjoy to his liking the proceeds of his labors.

In the past, I inherited two fortunes. One ended in smoke, when Sherman's army passed through South Carolina. The other feathered its wings with the Emancipation Act, and flew away. In the future, if "hard licks" secure me another, it will be enjoyed in the making. Now for the experience:

In 1866, I planted with hands contracted with for monied wages, and although I made just about cotton enough to pay them off, and had corn to buy for the following year, I do not feel that I lost money. From the first of June till the latter part of August, I had not a shower of rain. During this protracted drought, no time was lost. With the plantation hands, land was cleared, rails were mauled, fences renewed, old houses torn down and rebuilt; the dilapidation consequent upon the war was wiped out, and by 1st

January, 1867, the marketable value of my plantation had increased to an amount equal to the value of a good crop, and most of the labor had been performed by field hands.

In 1867, I again hired hands for wages, made a splendid crop of everything I planted except wheat, (and enough of that to avoid buying flour,) and sold the cotton crop for an average of eleven and a half cents per pound. The destitute condition of my employees, all of whom were strangers to me, enabled me to consume at home almost everything made on the plantation, except cotton. My wool clad them, my hides were exchanged for the leather that shod them, and so on, leaving the cotton crop to be disposed of and enjoyed as I chose.

In 1868, hands could not be hired for wages. The custom of the country was to "give a part of the crop." I had to yield, or lose my labor; and there I made the first false step. I lost money. In 1869, I should have had the same result, but for a large small grain crop, in which I alone had an interest. In the fall of 1869 a still larger crop of grain was sown, that saved me from ruin last year, for in 1870 I again "gave part of the crop," with laborers of every hue, from the ruddy Saxon to the dusky son of Ethiopia and lost by all of them.

During this great quinquennial period, family supplies of meat, fresh and cured, syrup, flour, fruits and vegetables, were grown on the plantation, and occasional sales of sheep, mutton, milch cows, and fine pigs were made. I think I may, with propriety, now request my inquiring friend from Georgia to answer the inquiry—"have I made money since the war?"

I do not believe one planter in a hundred throughout the South has done better than I; nor will they ever do as well so long as the owner's time and talents go for nought in the miserable system of "cropping" now almost universally adopted by cotton planters. The laborer who claims a part of the crop has his time, his labor, his rations, his all computed in the contract. The employer may reckon upon the rent, and wear and tear of land, and use of mule, but never have I heard of one claiming a dime for his time, knowledge, risk, protection, or manifold assistance. Such a course will impoverish any country. As soon would I think the Lowell manufacturer should share his manufactured calicoes with his operatives, as to approve giving my laborers part of my crop. If hands cannot be had for wages, better, far better would it be to rent them land for a stipulated product, say fifty, seventy-five, or one hundred pounds of lint cotton per acre for every acre cultivated, and allow the laborer to "pitch" and cultivate his own crop. This year I furnish a field of twenty-five acres and a fed mule to one family for 1,800 lbs. of lint cotton, the first ginned. To another, thirty acres for 2,000 lbs. The rest are hired for wages. If drought destroy my crop, these last will in one way or another add to the permanent improvements of my plantation enough to compensate me for their wages. The labor question is an exhaustless theme, and cannot here be discussed.

Cokesbury, S. C. D. WYATT AIKEN.

Commercial Manures and how to Experiment with them.*

Any one presuming in the face of the popular current now setting so strongly against commercial manures, to advocate their use, should be able to support his position by adducing, if not numerous, at least carefully conducted experiments, and I very much regret that absence from home during the early picking of the crop should have prevented my testing accurately with weights, various fertilizers used in different quantities, during the past season. If, however, we can not each one bring up for comparison such experimental data as is desirable, I am satisfied that a thorough interchange of opinion to-day, will be of value to some of us in the purchase of manure for the coming crop.

Before giving my opinion, which can only be in general terms, upon the value of different preparations used, allow me a word upon the theory of experiments. Upon reading the experimental efforts of such men as Alderman Mechi, George Ville, or any other plodding enthusiast, who deduces his conclusion from a score of plats to which manure has been applied, if by the ton, yet with great accuracy, for a dozen or more years, one is almost deterred by the labor and pains-taking required, from undertaking such work at all, and is tempted to smile when a neighbor tells with eager interest of an experiment which he made running through a whole year, and in which you could see the effect to the very row. Nor are we surprised if, proceeding upon information gained through such long experience, he should manure his whole crop accordingly, and find that a large part of his land yields very different results, whether that variation be owing to difference in previous manuring and treatment, difference in subsoil, difference in amount of vegetable matter allowed to accumulate, or any other cause.

This age of revolution, perhaps, shows no greater one than that through which the southern mind is now passing, and from indulging in theoretical statesmanship and broad generalities, is coming down to the hard practical details of every day life, with results not to be despised; and we imagine that the next generation will, on many plantations, be able to study, from a systematic record, the probable effect and profit of an investment in manure and labor upon a given field, such a record treating the whole and various parts of a crop, and of crops as a series of experiments.

Unable in our poverty to have recourse to those means of pleasure and recreation enjoyed and improved by an older generation, there opens before the man of active and intelligent mind a wide field for the exercise of his talents; and his productive acre may afford to him a mental enjoyment unknown to his more plodding neighbor, or his more fortunate predecessor. Farmers we are, and, to be successful, I fear that we must study to give our whole attention to the subject, because thoroughly identified with and wrap-

* An Essay read before the Pomological and Farmer's Club, of Society Hill, South Carolina, December, 1870, by Edward McIntosh, Esq.

ped up in it, with eyes and mind always awake to be benefitted by anything worthy of observation, whether it be an accidental or intentional test.

Now, as to the value of many of these experiments, paraded before us with such a flourish of trumpets. As the old soldier receives into an incredulous ear many a well told tale of dash and daring, so is the man slow to be befooled who has himself once, full of enthusiasm, with weights and measures in hand, gone into the field and then noted the chances of something going wrong. Strange it is, that two or three intelligent voters are so hard to be kept straight, but will put some of the phosphate in the wrong row in spite of you. Or if we have succeeded in finding a nice level piece of land, apparently uniform in quality, let us beware, lest when the manure is all down, we do not remember that just in the midst of our plot the manure gave out last year, or a pet crop on part of it got an undue share of the fertilizer. If none of these evil suggestions befal us, then we must take care that our plough do not stop some evening in the midst of the experimental rows, and a big rain prevent their starting again until a decided advantage has been gained by the cultivated portion. But I am advocating the use, not the disuse, of fertilizers, and merely wish to call attention to the great care requisite to make our tests valuable as guides; and when we expect, not 100 per cent. on the investment, but 15 or 20 or 30, it will be seen that the need for accuracy is very great. Where no better guide than one single experiment is to be had, that is to be prized, but it is only the aggregate result of numerous efforts that is really valuable. And if a test made on one part of a plantation will not answer for a piece of land lying a few acres distant, whether the cause be chemical or mechanical, then, however ready we may be to profit by the experience of our neighbor, let us depend rather upon observations made at home.

To those who have not the disposition for such painstaking work, I will suggest a more liberal use of the substitute so often used, in the shape of a stake driven wherever the manure happens to change in quantity or quality. A lead-pencil mark will last one season through, and besides the practical benefit, it adds vastly to the pleasure of walking over a crop in the growing season, if we can observe here the effect of Peruvian guano on one side, and Etiwan on the other; there the effect of cotton seed, seed being omitted for a few rows, where used in conjunction with a phosphate, and a little further on, the omission, from the same mixture, of the phosphate for a few rows an acre long; then a few rows with all manure omitted, or doubled, etc., in infinite variety. Dozens of experiments may be tried at almost no expenditure of labor. If the old adage be true, "that the master's tracks are the best manures," then I know of no better method for inducing numerous tracks than thus to supply his crop with points of interest, when the effect of dry or wet weather, or warm, close, or cool days may be observed upon the plants, so ready to respond to a generous feeder and cultivator.

Having long since concluded, that on ordinary upland it is only the man who owns the soil he cultivates, and closely overlooks his farming, who can

make a living without the assistance of commercial manures, and impressed with the idea that we, like the intelligent agriculturists of other countries, should not be dependent upon our own limited supplies of domestic manure, but should profit by the vast stores laid up through a good Providence, the question, in my mind, has not been whether to use them at all, but which to use, and in what quantities per acre are they most profitable.

Here my sanguine hopes of speedily enriching land, and its cultivator, have not been realized, and fractions of an acre, manured at the rate of 1,000 lbs. per acre, with Charleston phosphates of high repute, with dissolved bones from Baltimore, and with bones dissolved at home, proved a poor investment last year, which was excessively dry; and the same land has again this year failed to account for the treasure buried in it, instead of verifying those promises of permanent improvement so freely made by the venders of manipulation. Similar experiments were made during the past season, which has been a wet one, while resulting more favorably, they require a rise in cotton before the profit can be calculated. The experiment has at least taught me one thing, that in heavy manuring, if only three rows are left unmanured, they profit very much from the adjoining ones. On land from which, without manure, I would have expected six or seven hundred at farthest, there were four sets of rows, three each, left unmanured, to my surprise they yielded at the rate of thirteen hundred pounds per acre, and must have been much benefitted by the dust settling on them when the other rows were being manured, and by the long feeding roots of the cotton going far beyond their own special territory.

Another year I propose to leave a larger number of rows unmanured, and to weigh only the centre three of seven. Though not successful in the use of such large quantities, I am, perhaps, above the average in using generally about 225 lbs. of Peruvian guano, or 350 lbs. of phosphate, wherever the application of cotton seed, lot manure, compost, or the growth of weeds, will justify it; and when further effort shall have succeeded in producing a more satisfactory growth of vegetable matter, I am confident that a more liberal application will be justified. In the address before our State Agricultural Society, recently delivered by its President, he advocated the use of about six dollars' worth of commercial manure per acre, applied to all crops—corn, cotton, and small grain. This sounds at first quite moderate, and rather behind the figure of advanced farmers, but, if calculated in reference to the amount per horse, will be found very liberal; and if his system of manuring and rest were more generally adopted, no doubt many of us, as well as himself, would in a few years find that the improving and grateful soil would respond profitably to a more liberal expenditure.

As to the kinds used this year, I am forced still to prefer the Peruvian, or, according to price, the Chincha Island, or Guanape; which latter, side by side with its illustrious predecessor, shows well. Theory says, that a combination of Peruvian guano and cotton seed is a waste of ammonia; my observation is entirely otherwise. Next I would rank the Etiwan No. 2, Pendleton's

Compound, Navassa, and the Acid Phosphate, prepared by the Pacific Guano Company for use in connection with cotton seed. I regret exceedingly that this last was not tested more accurately with weight. But, like all the other manipulations, its price, $45 per ton, to the uninitiated seems too high. If plaster can be ground and prepared for market at $15 per ton, we are slow to believe that the grinding and dissolving of a harder material justifies three prices. On my land, the Pacific Guano and Carolina Fertilizer do not show so well as the others this year; perhaps another year may give different results, I have again tried Poudrette, prepared by the Lodi Manufacturing Company; tried it on corn and cotton, 500 lbs. per acre, and 1,000 lbs. per acre, in the bottom of the central furrow, on two furrows, and broadcast, but it seems to be street sweepings, with an exceedingly slight admixture of night soil. If some man of honesty will undertake its preparation nearer home, I will be glad to try again John Chinaman's favorite fertilizer. Without questioning the need of salt and plaster on other lands, my observation in 1867, '68, and '69, induced me to think that my soil is so much more deficient in other elements than those furnished by them, that for the present, at least, I shall discontinue their use.

The above is mostly in reference to cotton; upon corn the returns have been quite meagre, the profits doubtful, and I continue it because the effect is marked upon the succeeding oat crop, the weed crop after oats, *ergo* the cotton crop, or whatever may succeed the weeds. With me it has seemed to make but little difference whether the manure applied to small grain was ploughed in during the fall, or put on as a top-dressing in the spring.

There are some points upon which, in common with other members of this club, I have taken a lively interest, namely, at what depth we should manure our light lands. In addition to experiments made during the two preceding years, on the present crop, I made it a point in every field, and with all the manures, both commercial and domestic, to test this matter thoroughly, and kept a supply of stakes convenient, so that no matter how or in what quantity we were putting down the manure, it was an easy matter to alter the mode for a few rows an acre long; and I am greatly surprised to find how little difference it makes whether the fertilizer be put in the bottom of the centre furrow, on the ridge made by two coulter furrows thrown together, or, if manuring old cotton land, in the balk just ahead of the plough which opens the centre furrow. If there be a difference, it has not with me been perceptible to the eye.

But there is one, or rather many, vast experiments being tried on every road-side in the country, with results too clear to need weighing or measuring; it is the continual use of commercial manures upon land which for years has not had an opportunity to accumulate vegetable matter, and to which, if cotton seed, compost, or lot manure had been applied, it has been with a niggard hand. It requires no wisdom to predict results in such cases, no matter whether the manure be called plant food, renovator, or some other promising name.

New Joint Parching Corn.

The most productive variety known, *producing from eight to ten ears on each stalk.* Equal to a yield of from one hundred and fifty to two hundred bushels per acre. Although it is, strictly speaking, a variety of parching corn, it is equally adapted to all purposes of common field corn for stock and poultry feeding, etc. It weighs, when shelled, stricken measure, sixty to sixty-two pounds to the bushel. It should be planted in drills three feet apart, putting one kernel to every foot.—*B. K. Bliss & Son's Catalogue.*

We do not introduce this illustration merely on account of any importance attached to this particular variety of corn, good as it may be in its way, but to help enforce our suggestions in the February number of THE RURAL CAROLINIAN, in regard to the improvement of Indian corn generally. What has been done for this small-eared pop-corn, can be done for the larger growing sorts. The tendency to produce ears at the various joints can be wonderfully increased, by pursuing the course indicated in our previous article.

Rice Culture and the Introduction of Carolina Rice in Italy.*

ON THE CULTIVATION OF RICE NEAR BOLOGNIA.

The cultivation of rice has extended in the territory around Bolognia, but not so much as in the provinces of Lombardy and Piedmont. From early records it was ascertained that rice in Italy was in former times only used as a medicine, and to a slight degree, for its nutritive properties. Before 1400 it was not cultivated in Bolognia. By a valuable manuscript left by Malvasia, and written in 1610, which contained full information on the agricultural products of the country, it appears that rice was not then much experimented with among the cereals planted for food.

This plant was introduced into Italy in 1532, by Theodore Trivulzi, a captain of the Venetian Republic. At first it was employed as a drug by the pharmaceutists, and specimens in glass vessels are preserved. Trivulzi and the Venetians were the first who brought the seed from Greece, and its cultivation extended from the environs of Verona to Lombardy. The Greeks obtained their seed from Egypt, where it was brought by the Califs from India. Thus our first seed was of Eastern origin.

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* Translated and condensed from the Italian of Prof. E. Bertoloni, in the "*Giornale di Agricoltura*" of Milan, Italy, for November, 1870. By F. Peyre Porcher, M. D., Charleston.

From early documents, it appears that in 1600 the cultivation of rice near Bolognia was not extensive. There had been repressive laws against it; and even in 1700 these existed. Both the dry and wet culture was used to some extent.

It is stated, that in the Exhibitions of London and Paris, the quality of the Bolognia rice was superior to that from the rest of Italy, from Europe, and from many parts of the world; and the seed obtained from that locality is in great demand throughout Europe.

The first rice cultivated in the provinces took the name of *nostrano*, or country rice. In the beginning of this century, it was simply a variety of the *Oryza sativa* of Linnæus; but, after the first twenty years of the century, another variety was introduced called China rice, with properties and characters peculiar to it. In 1829, the Marquis Pizzardi received an importation from South Carolina of the rice called in Italy China rice, which he obtained from a correspondent in London, who got it from Charleston. This had the excellent quality of resisting firing; it was sharply bearded, matured sooner than the others, had a shorter spike, and its grain was good. It was improved, and much praised. Between this, the Chinese, and the variety known as the *nostrano*, or country rice, there sprang up a bastard rice, which was nevertheless of good quality.

The author, in concert with others, made a series of experiments with many varieties of rice received from the Philipine Islands, which were not attended with happy results, which he partly ascribes to the lateness of the season at which they were received and other causes. They suffered from a disease of the plant called in Italy *Bianchella*, from the fact that the stems which fail to bear seed turn white. This may depend upon extreme heat acting upon some of the stalks, and more particularly upon the stamens and other delicate organs involved in the inflorescence and subsequent fructification of the plant. The Cav. Certani, a learned Italian agriculturist, is of the opinion that the disease is produced by a mortification, or death, of the culm or stem, a little above the last joint, caused by a drop of dew deposited during the night, and arrested near the upper joint, which is influenced by the refraction of the warmest rays of the morning sun, and which destroys the part. Thus there is an arrest of the flow of nutriment to the flowering raceme, which, not being sufficiently nourished, becomes dry and blanched. The author is inclined to localize the principal cause of sterility in the sexual organs themselves, and he thinks that it is extreme of heat which induces the death of the organs of inflorescence, because this took place under glass where there was no dew.

After this fruitless experiment by the author with forty-three varieties of rice from the Philipine Islands, Signor Burzi and other proprietors introduced from Trieste, in 1844, a new rice, also said to be from Carolina, and which was different from the "Chinese of South Carolina," which also produced abundantly. The next year the same gentleman, with others, imported a large quantity of the seed from Carolina, and so diffused it through-

out Bolognia, which, being infected by the home varieties, was called American.

The Marquis Pizzardi, recognizing this tendency to deterioration, communicated with the Minister of Agriculture, and steps were taken to have fresh and new supplies obtained through Sig. Delucca, representing Italy at New York, who forwarded large quantities of good seed of the rice known as Carolina rice. This has furnished very satisfactory results. The marquis, also, by selecting the largest and best plants, has finally obtained a variety which, from its great size, is called giant rice. It does not, however, possess the pearly lustre of other kinds. The variety called "Mutica," or beardless rice, raised by the same gentleman, also comes from South Carolina. It is much sought after, but is slow to mature.

The Madagascar rice has likewise been recently introduced into Italy, and a rice from Japan is being experimented with.

Esparto Grass not Stipa Tenacissima.

I have for some time past noticed that the Esparto grass of the Mediterranean is mentioned in agricultural and technical articles as *Stipa Tenacissima;* and I observe that the name has crept into an article in your January number. Now, as you have justly remarked in a previous article, there is something in calling things by their proper names, long and "furrin" though they be. Any one acquainted with the *jointed* culms of our native *Stipa avenacea*, or the *S. pennata*, the original "Feather Grass," might well wonder how such a plant could furnish a fibre fit for twine, the cordage of vessels, and a hundred similar uses requiring both strength and *length* of fibre, for which the Esparto is employed in its native country.

The fact is that the Esparto is not a *true* grass at all, but is next of kin to our common "toad-grass" and the well known "Bulrush and Bayonet Rush" of our meadows—being scarcely distinguishable from the latter at first sight. The rushes have no joints in their stems, and hence yield a long even continuous fibre. The Esparto is the *Juncus tenacissimus* of botanists.

I have before me some press-bags and baskets made of the Esparto, which I brought from Spain fifteen years ago; having frequently witnessed the process of manufacture. They have been used and roughly at that, in a great many ways; but the strength of the fibre has remained undiminished, so long as mould has not been allowed to form on them. The press-bags (similar to those always used in wine-pressing in Andalusia) are greatly preferable to horse-hair ones, and their cost is about one-fifth of that of the latter. The baskets, selling at from one to two cents at the market-stalls of Malaga and Almeria, are kept by the hucksters for the convenience of their customers, who never lug big, unwieldy willow-ware to market, but frequently get a basket thrown in gratis, when making a purchase of any consequence. You can fold up and carry such a basket in your coat pocket; yet their strength

is such that they will serve you for saddlebags, even should you (as I have often done) fill them with rock specimens, and then make your animal jump ditches.

The Esparto would undoubtedly be a great acquisition to our industry as a cheap and strong fibre, capable of growing on soils where nothing else that is useful *will* grow. But so far as paper making is concerned, I do not see why some of our native rushes, above referred to, should not be almost as serviceable. The fibre of several of them is fully as strong as, or even stronger than that of cotton—the material most sought for; and they can be had in unlimited quantities, without sowing or acclimation. The climate in which the Esparto flourishes most, is that adapted to the making of sea-salt—the coast of the Peninsula from Valencia to Lisbon, and that of Africa lying opposite. Hence, doubtless, the coasts of Florida and Carolina are suited to its growth; but it may succeed all around the Gulf of Mexico, and it is to be hoped that the matter will be taken in hand seriously by the Department of Agriculture.

EUG. W. HILGARD.

University of Mississippi, January 26, 1871.

[We are glad to be corrected in regard to the botanical name of the Esparto, before the error has been more extensively propagated. We published it as received from Professor Jouanne, of Algeria, without any special attention on our part, being drawn to that particular point. Professor Hilgard's suggestion in regard to our native rushes, is certainly worthy the attention of our paper manufacturers and experimenters with fibres.—Ed.]

Durra, or Doura, Corn, (Sorgum Vulgare.)

This remarkable plant grows well on the poorest soils; that best suited to it, however, is a light sandy loam in its natural state or made as rich as you please. The land is put in ridges some four or five feet apart, a little before the time of planting, which commences as early as the first of March, and lasts to the first of July. Frost has little effect upon its germination and growth. These ridges are then opened with a suitable plough, and the seed drilled or sown according to the quality of the land; in covering, however, care must be taken that it be not done too deep; covered with a plough or heavily with a hoe, the seed will not germinate. A peck or bushel of seed (according to the mode of planting) will serve an acre. If planted as common corn, and the seeds are good, five or six grains to the hill is sufficient for the purpose. It should afterwards, on good land, be thinned to two stalks in the hill. It requires but little culture; give it only a fair start, and it will soon leave in the *shade* grass, weed, and every other intruder. If sown on good land, which has been previously well prepared, it will turn out with ease from eighty to one hundred bushels of grain to the acre, and a sufficiency of stalk and blade to fatten all the horses, mules, and hogs on the plantation. When sown broadcast, for the purpose of soiling cattle, it may be cut, like the grasses generally, several times in the season, if it is done so as not to injure the buds near the ground. It is often cured, and made into excellent fodder

and hay. The ears should be cut as they ripen. The stalks may be cut after the seed has been matured in September or October, and fed to cattle; but it is best for the soil to turn them into the fields upon the stalks and blades; it fattens them as well, and leaves a rich debris to be turned under for any other succeeding crop. But when the stalks are cut and housed, they will remain green for months without fermenting in the least. A writer in Alabama thus speaks of it:—"The planters here, after gathering their seed, and curing as much as they desire of it, in September or October, turn all their stock into the fields to feed. No further care of them is necessary, except to salt and water them. If the field is large enough, in a short time all will get fat on it, and leave the ground covered from ankle to knee deep with the stalks."

This grain is one of the finest in the world too for poultry of all kinds, and will make excellent bread for the sustenance of man. In Egypt, China, India and Arabia it is as essential as our wheat in America. On poor land, with or without good seasons, the durra will yield more than any other grain with which we are acquainted in this country; and this, taken with the facts that it requires little labor—affords more litter to the land than any other crop, and yields, besides its grain, a rich fattening material in the saccharine juice of the stalk, clearly renders it one of the most important of the cereals.

[Will some one who has it to spare favor us with a small package of the Doura? We have not had the pleasure of seeing it growing since the war. Ed.]

An Experiment With Eight Different Kinds of Fertilizers.

There are now in the market for sale about forty different kinds of fertilizers. Each of these is supported by a long list of certificates from various planters, who testify that they have used them—some one and some another—but all bear witness to good results. No proprietor or agent is without his list of certificates to show that his particular fertilizer is as good, if not better than any other. Now, how are planters to know which is the best? Notwithstanding these long list of certificates, we find some farmers, yea, too many, who find that by practical application, after giving them a fair trial, prove them to be worthless fertilizers (or so-called fertilizers) and come out in debt and denounce all guanos.

Now if farmers would put themselves to a little trouble, we can soon find out the standard or best fertilizers, but to ascertain this, we should try different kinds of fertilizers, side by side, and *publish the results of these tests, giving to the farming community the method of application, mode of culture, and the character of the land planted.* * * * * * * *

This year I have tried seven different kinds of fertilizers, side by side, viz;

1. Bradley's Super-Phosphate of Lime.
2. Whann's Raw Bone.
3. Wilcox, Gibbs, & Co's Manipulated Super-Phosphate of Lime.
4. Patapsco Guano.
5. My own Compound.
6. Soluble Pacific Guano,
7 Mapes Super-Phosphate of Lime.

The land was a very poor old field, clay near the surface. It was planted in cotton last year but "lay out" the year before. The rows were three feet three inches apart. I did not break the land "flush" but ran furrows

between the old rows, with an eight inch shovel plough, made with two wings in order to leave the furrow well open. This shovel plough ran twice in the same furrow. Then I drilled the guano in this furrow at the rate of 320 pounds to the acre, ran a No. 10 cast iron plough (Yankee) about eight inches deep on each side, covering the guano. This left a ridge on the old bed where the old cotton stalks stood, about 7 or 8 inches wide, which I "bursted out" by running my two-winged shovel plough very deep. The land was planted April 10th and cultivated with the sweep-plough and hoe. The rows of this experimental field were 1 acre, or 70 yards long.

The following is the result: I picked from— Pounds.

Row manured with Whann's Raw Bone.....12¾
Row manured with Patapsco Guano.....9¾
Row manured with my own Compound.....9¾
Row manured with Soluble Pacific.....9¼
Row manured with Bradley's Super-Phosphate.....9
Row manured with Wilcox, Gibbs & Co's Manipulated.....9
Row manured with Mape's Super-Phosphate.....6¾
Row unmanured in any manner.....2¼

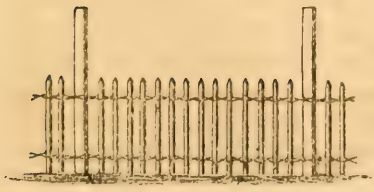
As before stated the land was very poor as will be inferred by the yield of the unmanured row—2¼ pounds. As the rows were three feet three inches apart, there would be sixty-four rows to the acre. Now as Whann's Raw Bone stands ahead in this experiment, let us make a calculation as to whether or not it would pay, and if it would pay, how much?

One row, manured with Whann's Raw Bone, gave a yield of 12¾ pounds. This multiplied by 64 (the number of rows to the acre, at the distance taken) gives 816 pounds per acre. The row without guano made 2¼ pounds which, multiplied as before by 64, gives 144 pounds per acre. Deducting 144 from 816 leaves 672 pounds, as the net gain by the use of this fertilizer. This 672 pounds of seed cotton will make at least, 200 pounds of lint, which at 15 cents per pound, will give thirty (30) dollars. This sum is the gain per acre of an acre over and above that which an unmanured acre would yield. But we must pay for the guano out of this $30. The cost of this, (including hauling, &c.,) was $12 80; deducting this sum from $30 leaves $17 20 as the clear profit.

But it must be borne in mind that we had 672 pounds of seed cotton after deducting the amount made upon the unmanured acre; and in reducing it to lint we threw off 472 pounds for the weight of seed. This will give us, at least 18¾ bushels of cotton seed, which at 20 cents per bushel will give us the further sum of $3 70. Adding this to the above sum of $17 20 gives $20 90 as the whole gained per acre by the use of Raw Bone. Besides this we may expect some gain in the crop of the succeeding year. * * *

GEORGE C. DIXON, *in Planter's Journal.*

Wire and Willow Fence.



Set black or powder willow posts about eight feet long and from four to six inches thick, twelve or fifteen feet apart, on the line of the intended fence. The next year after they have taken root, procure No. 9 wire and willow pickets say four feet long and two inches over, and by weaving them in, you can make for seventy-five cents per

rod a fence that no bull can go through and no horse pull down. (I do not mean that the pickets should take root.) The posts will last a great while, and it does not require half the attention and trimming of the Osage or any other thorn. In three or four years, you can cut the pickets from the top of the eight-foot posts, to prevent too much shade if not needed. The pickets wil last twenty years, and no nails are needed—only staples at each post to hold the wire. Trouble with the expansion or contraction of the wire is also somewhat obviated in this fence, and there is no danger of stock becoming entangled and injured in it. The posts are eight feet long to prevent stock from eating the tops off, which would destroy the post; it is well also to wash them over once or twice a year with cow droppings.—I. L. *in Country Gentleman.*

[The accompanying illustration is in error in representing the posts above described as made of square timbers, instead of being growing willow trees as was the writer's evident intention.—Ed.]

A Simple Farm Gong.

Calling on a friend during one of my wanderings through the north-western part of the county of Perth, (an English correspondent says,) I saw an excellent farmer's gong. It was made by taking an inch and a quarter round bar of English iron, bent into the form of the accompanying diagram, and suspended by the loop in the centre. The length of each arm was about four feet, and when struck with a hammer, produced a clear ringing sound, easily heard a full mile,and with the wind nearly two miles. This particular shape seems to be the best adapted for the production of sound; without actual experience, no one would believe how very loud and clear it was. You will notice that the ends are turned round into a circle of about four inches diameter, and are gradually brought to a point, the iron towards the end being about half an inch in diameter, and the extremity rounded similar to the end of the finger.

This gong was found exceedingly useful, and a regular code of written signals was used, and a copy was always kept hung up close to the gong, so that any one wishing to call for meals struck in accordance; if the proprietor was wanted by a visitor, another series of blows were used; if fire or accident, which required instant attendance, the gong was struck rapidly and forcibly with an iron hammer, in quite a different way from ordinary requirements. Fire did once occur, and then it became every one's duty to run rapidly towards the homestead. These signals being written down and explained, worked to admiration at the time of the fire; the gong certainly saved the house. All were out but the mother when the accident occurred, who, with her little baby a week old, happened to be the only inmates, and, from her recent illness, was quite unable to climb the roof and extinguish the flames; but she could beat the gong, and did so, and the unusual signal for fire aroused all within hearing, who hastened to the house, and the fire was easily extinguished. But for the gong the homestead would have been burned to the ground.

Department of Horticulture and Rural Art.

The Fig—One of Our Neglected Resources.

THE CERTAINTY AND VALUE OF THE FIG CROP.

Among the many varieties of fruits adapted to our Southern zone, the Fig has not received all the attention it deserves, viewing it for commercial purposes. True, few gardens throughout the country are without a fig tree, but beyond supplying the table with the fruit in a fresh state, no use is made of it. No attempt seems to have been made to grow it on a large scale, for the purpose of drying the fruit and bringing it in competition with the imported article.

The most favorable conditions for its successful culture are happily combined in a suitable climate and soil, especially on the sea coast of all the Southern States, where the fig tree attains great size, produces never-failing large crops, and is entirely free from disease. No fruit requires less culture; skilful pruning is not needed, and where the tree receives a supply of nourishment, it is sure to return its value in a most abundant harvest of wholesome fruit.

PREPARING THE FIG FOR MARKET.

Of the process of preparing the Fig for market, less is perhaps practically known here, than of any other kind of fruit extensively cultivated. This circumstance certainly does not arise from the climate being ill adapted to its culture, but no doubt from the same cause that keeps our agriculture in a state of routine instead of progress and improvement.

We have seen some very good specimens of dried figs produced here, and what has been done can be done again. If the culture of the fig were undertaken for the purpose of drying the fruit, it would result in a source of large and regular income to the farmer. There may be a partial failure of the peach and apple crops, but the fig never fails where, it is not winter killed.

HOW TO DRY FIGS.

The following method was quite successful with ourselves, and although the article produced was not equal in appearance to the large imported Smyrna figs, the quality was very satisfactory.

Gather the figs when the skin begins to crack, (which is a sign of maturity and then the fruit contains the largest amount of sacharine matter); make a strong lye of oak ashes, or take common cooking soda dissolved in hot water; quickly dip the figs in the hot liquid and remove immediately; expose to the air for a minute or two, and repeat the dipping. If the lye is hot and strong enough, the color of the fig will immediately change, the dark varieties to a bright green, and the pale colored to a light green. Place the figs upon

trays made of wooden slats and expose to the sun, taking care not to allow the dew to fall upon them. After a few days the are ready to be put away in small wooden boxes, first putting a layer of spice, laurel or bay leaves at the bottom and another on the top. Put the lid on tight to keep insects out. Figs placed in a dry room, will keep a long time.

If a brick oven is convenient, it will greatly facilitate the drying process, care however must be taken not to give too much heat. So soon as the figs show signs of secreting syrup, they have been put under too high a degree of heat and they will thus make an inferior article. Frequent turning of the fruit is necessary, and after the second day, it is advisable to lightly press the fruit with the hand so as to flatten it.

The light colored varieties are preferred for drying, although some of the brown skinned kinds, especially the brown Turkey, make a very good article.

THE FIG AS A PICKLE.

The fig can be made useful in several other forms, such as pickling, preserving and making jellies. As a pickle it certainly surpasses the cucumber, of which an immense amount, in a pickled form, is annually imported South, and no doubt a large demand would arise for it, was the article put upon the market and made known.

To pickle, pick the fruit with the stems. The figs must be matured, but not too soft. Put the fruit in a vessel; sprinkle with salt in the proportion of one half pound to each peck of fruit; pour boiling water on the whole and let stand twelve hours; afterwards, put the fruit in a colander, and if too salt rinse with cold water. Fill the jars with the fruit; take strong vinegar, add a quarter of a pound of sugar to each quart; boil and pour the hot vinegar upon the fruit. In filling the jars with the fruit, some cinnamon bark and cloves should be mixed through it.

VARIETIES OF THE FIG.

The nomenclature of the fig is somewhat confused, and some difficulty exists in attaining a correct list of synonyms. The following varieties we have found the most desirable:

Black Genoa.—Size, medium; long, tapering near the stem; skin, dark purple, covered with bloom; pulp, bright red; very good.

Black Ischia.—Medium size; round; skin, dark purple, nearly black at maturity; pulp, deep red; very prolific and excellent.

Brown Turkey.—(Synonyms, Lee's perpetual, Brown Italian, Jerusalem, Murray, Howick, Walton, Common Purple, Brown Naples, Large Sugar Fig, etc., etc.) From its numerous synonyms, it shows its great popularity. Fruit, medium, oblong pyriform; skin, dark brown; pulp, red, very sweet and excellent. This is, unquestionably, the most prolific variety for this section, it produces very large and regular crops and is well adapted for drying.

Brunswick.—(Synonyms, Madonna, Constantinople, John Mann Fig, Brown Hamburg, Hanover, Bayswater, etc., etc.) Fruit, very large, pyriform; skin, violet brown in sun, pale greenish violet in the shade; flesh reddish, with occasionally a hollow centre when grown in a very rich soil; very rich and excellent; a prolific bearer.

Green Ischia.—(Synonyms, Green Italian, White Ischia, Green Red Withers, etc.) Fruit, of medium size, round obovate; skin, pale green, very thin; pulp, deep red; very rich and well flavored; a very desirable variety, and quite prolific.

Celestial.—(Synonyms, Small Sugar Fig, Small Violet.) Size, very small; skin, purplish, with much bloom; pulp, pale pink; very sweet and excellent; matures early, and when fully matured, may be eaten without peeling; dries very easily, but is rather small for that purpose; very hardy and prolific.

Lemon.—(Synonyms, Yellow Ischia, Cyprus, Des Deux Saisons à Fruits Jaunes, etc.) Medium, roundish; skin, pale yellow; pulp, red; delicate and rich; a very good variety; moderately productive.

Marseilles.—(Synonyms, White Marseilles, White Naples, Pocock, Standard, etc.) Size, medium; round obovate; skin, very pale yellowish white; flesh, white, rather dry but sweet. This variety is extensively grown near Marseilles, and along the coast of the Mediterranean, for drying purposes, and can be recommended for that purpose here. It is not a desirable variety for open field culture in the interior, but thrives remarkably well on the sea coast. This variety is said to be the same as that grown near Smyrna, and from which the best figs of commerce are produced.

Nerii.—Skin, pale greenish yellow; fruit, small; pulp, red, very delicate and of excellent flavor; it is not very productive in open field culture.

Of the varieties not so well known, but deserving mention, the following are desirable for amateur culture:

Angelique.—(Synonyms, Melitte, White Coucourell, etc.) Fruit, small yellow; pulp, white, sweet; very early and moderately productive.

Early Lemon.—(Synonyms, Jaune Hâtive.) Similar to Lemon, but ripens a week or ten days earlier.

Madeleine.—Is a small white fig, very sweet, but not very productive.

Pregussata.—Size, medium; brown; pulp, deep red, flavor good.

Superfine de la Saussaye.—A medium fig, round and much enlarged towards the stem; skin, brown; very sweet and good; leaves deeply lobed.

Violette Ronde.—Fruit, medium; skin, violet; pulp, deep red; very sweet and moderately productive.

We have several other varieties in our collection, but they are either inferior, unproductive, or doubtless only synonyms of some of the foregoing described varieties.

P. J. BERCKMANS.

Fruitland Nurseries, Augusta, Ga., 1871.

The Rural Flower Garden—Thunbergias and Tropæolums.

Thunbergia.

Among the many annual flowering plants advertised and offered for sale by seedsmen, and grown by those who love to make their home-grounds attractive, beautiful and pleasant, not only to visitors but their own family, the Thunbergias and Tropæolums may be classed as old "stand-by's," of easy culture, of rapid growth, and abundant, varied and beautiful in their flowers.

I have obtained of James Vick, Rochester, N. Y., who is one of our most energetic, enthusiastic and reliable seedsmen, cuts illustrative of these two species of flowers, which I herewith send you, that they may help my words in reminding old cultivators of their value, and in drawing attention of the novices. Not but what there are other equally good plants to grow, but all cannot be written of at one time and published in any monthly journal, and so now I confine myself as above named. Every grower, however, should send to Vick, or some other reliable seedsmen, for a catalogue.

The Thunbergia is a native of the East Indies, and is especially suited to culture in the warm soil and climate of the Southern States. Loudon says it received its name in honor of Charles Peter Thunberg, a professor of botany in the University of Upsal. It is best to start the seeds in a hot bed, or some place having a bottom heat, and so bring them forward early in the season. When well established in the ground, I have found pegging the long shoots or vines down causes them to flower much more abundantly than when permitted to have their own way, or even when trained upon wires or stakes. In rustic baskets, vases, over stumps, rock-work, etc., the Thunbergia is an extremely beautiful plant, and should receive far more attention from those who have such positions for its growth.

Tropæolum Peregrinum.

The Tropæolums will probably be recognized by many under the name of Nasturtium, others know it as the Canary Bird Flower, which our figure represents. It is one of our oldest and best climbing flowering annuals, and previously to about 1830, but little attention had been given to increasing the varieties or enhancing the beauty of its flowers. Since that time, however, great attention has been given thereto, and now Vick and others give lists of distinct colors, as well as the mixed varieties, so that one can grow and arrange, if placed in a bed and pegged down, to the forming of almost any pattern. Beds cut out of the lawn or grass plot, I have seen made with the varieties of the Tropæolum that rivalled even those made with variegated leaved plants. Trained as a hedge on wires, the Tropæolums make pretty boundaries to the flower garden or lawn. As an edible plant it is also valuable, many relishing the flowers as a salad, and others the seeds gathered green and pickled in vinegar.

Both the Tropæolums and Thunbergias are valued for green-house and window decoration, as well as for out of doors. Upon the rafters or wires in the green-house, or on trellis or wire in the window of the living room, they grow rapidly, and the Lobbianum varieties of the Tropæolums flower freely during mid winter. Loudon says that "the flowers of the Tropæolum in the evening emit spontaneously, at certain intervals, visible sparks like those of an electric machine, and that this was first observed by a daughter of Linnæus."

FRANK AMON.

An Experiment with Different New Kinds of Tomatoes.

Last spring I procured from Mr. Peter Henderson, of New York City, the "Rising Sun" and "Chorlton's Prolific" Tomato seeds. In an article of his, published in *The American Agriculturist*, he recommended the "Rising Sun" as best, "General Grant" next, and "Chorlton's Prolific" third, out of twenty kinds that he had grown on trial. The seed of the "General Grant" was given me by you, Mr. Editor, with request to try and report.

Having a plenty of seed of my own saving, of what I knew to be good kinds, I sowed my first crop with my own seed, and saved the others for a little later sowing, when there would be no danger from frosts. The plants of these three kinds were carefully set out in well manured, and thoroughly

prepared beds on the 6th and 7th of June; about twelve plants of the "General Grant" were, however, set out along with the earliest plants. The fruit on these plants was inferior to that on plants from my own seed, and rotted worse; soon after this I set out in a small, newly formed flower garden, four plants of another kind from seed given me also, but the seed being imperfect very few vegetated, and even they very tardily; but being struck by their remarkable vigor, I kept them thus separated. The season proved most unfavorable to the crop of tomatoes, so that by the middle of July the whole of my first crop, rows 105 feet long, ceased to bear and soon died out.

The plants of the "Rising Sun" "General Grant" and "Chorlton's Prolific," were set out as a second crop. Although the plants grew very well, and extra pains were bestowed upon them to make them bear, the only variety that bore any fruit was the "Chorlton;" but none of them ever came to perfection; all of them blighting or burning on the lower half, until towards October when, along with the other two kinds, they began to bear fruit, but still small. Of the other two kinds the "General Grant" proved the most productive, and the fruit best.

The four plants of the other kind, during the months of July, August, and September—when I could not average one pint per day from about one hundred plants, of the "Rising Sun," "Gen. Grant" and "Chorlton's Prolific,"—furnished me a fair supply of fruit daily. The tomatoes were of good size, good shape, and good color, ripening perfectly up to the stem, and I was so much pleased with them, that I subjected the fruit to many experiments. I gathered the fruit in the state for shipping North, i. e. just as they began to change color; and on the 8th day they were ripe enough for use. Five fully ripe ones were, on 31st July, put on a plate in a cool place in my house, and on 31st August the last one began to decay. I made memoranda of the dates of the decaying of the different ones, but it has been mislaid, and I can recollect only this, being the most remarkable one; but none began to decay very soon. When fully ripe they pealed like a ripe free stone peach, not requiring to be scalded either for salad, stewing or sauce; when dressed as salad, they almost melt in the dressing; and the best okra and tomato soup that I had last summer was made with them. They ripen and color perfectly quite up to the stem, are fleshy, perfectly free from any hard core or hollowness, therefore must weigh well, and cook well, being fleshy and not watery.

As the seed with which I started came up so badly and tardily, I sowed some of my own growth which came up quickly, and scarcely one failed; proving that the tardy and bad sprouting of the seed given me was owing to its imperfect condition. The plants were so remarkable for the vigor of their growth, was the reason for setting them away from all others; so that my seed is pure and genuine. Some of the plants from this sowing were set out quite young on the 17th September, and ripened a few fruit before the killing frosts of 15th and 16th of November. I was so very much pleased with it, I saved all the seeds that I could, believing that it would prove *the* variety for

the Southern grower, for the Northern market. I will send you some of the seed for your own trial.

I intend, if alive next spring, to sow about half of my crop with this seed, and the other half with my old and tried seed, trying the "Rising Sun" and "General Grant" early, but on a small scale. I notice quite lately that a new kind, the Headquarters, is put upon the market; if it prove better than my new kind, it must be *good* indeed. If alive another season, I will make more careful experiments, and furnish you the results.

ROBT. CHISOLM.

Hints on Pear Culture.

With the article under the above heading, in the January, 1871, number of THE RURAL CAROLINIAN, there are some points with which I take issue, not, however, I trust, carpingly, but with a feeling that they tend to deter the extended planting and growing of the pear in the Southern States. With the general tone of the article, with the assertion that ignorance of the primary laws which govern the culture of the pear exists, and that it is desirable, when you have it, to place the pear orchard in soil and location generally regarded as best for its success, I agree; but I would have no one neglect or forego the planting of pear trees because he happen not to have a clayey soil; or an exposure sheltered by a forest. It is generally conceded that the pear, when worked as a dwarf on the quince root, succeeds best in a heavy soil, but the greatest number of standard healthy old trees of the pear, on pear roots, in the United States, are found growing in light, loamy, naturally well drained soil. The success of the pear on quince even, in light soils, is not apocryphal, but, when dwarfs are wanted for such soils, the mountain ash, as well as the thorn, have proved successful over twenty years; and when the cultivator neglects the now generally conceded requirements of pruning such trees when grown in such soils, these latter named stocks are, perhaps, best. It is, however, a question whether the owner of light soil should ever attempt dwarf pear culture, because the pear, on its roots, will with him grow quite free enough; will come almost as early into bearing as when on the quince root; can be planted almost, if not quite, as near together, selecting, of course, the varieties; and is in such soils less liable to overstrain itself, and hence acquire disease, because it grows more evenly and steadily, and ripens the wood better than when in heavy strong rich clay.

F. R. ELLIOTT.

Cleveland, Ohio.

The omnibus and street car companies in New York City have found that a horse weighing 1,000 or 1,100 pounds is the most serviceable, and the best food for him is twelve pounds of hay a day, fifteen pounds corn meal, and two or three pounds of salt in a month. The hay is cut, moistened, and the meal mixed with it. Twenty miles travel a day is expected of him.

Carolina Red June Apple.

This is one of our best and handsomest early apples, suited to our climate, and succeeding well in the West and Southwest. It seems to be variable in its time of ripening, being in some localities earlier than Early Harvest, and in others from one to two weeks later. Its flavor with us is much better than at the North. On account of its bright color and fine appearance, it is very saleable in market.

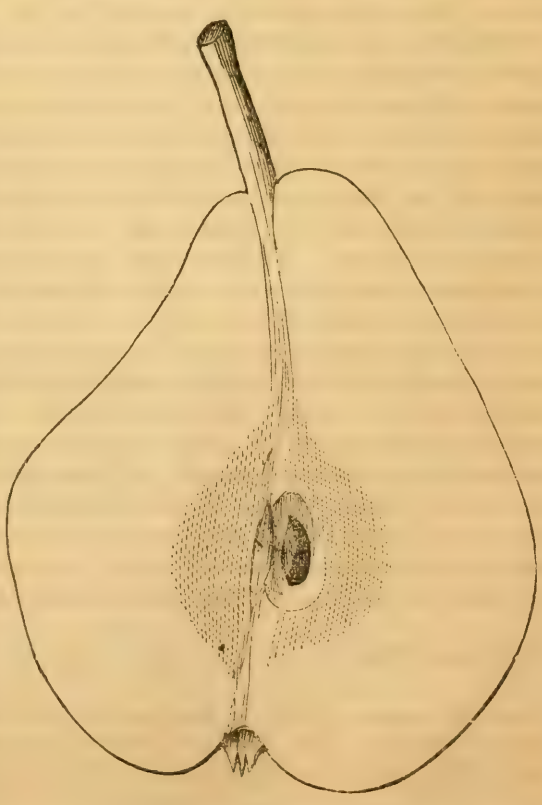
The fruit is medium in size; oblong; very red where exposed to the sun; flesh, white, tender, juicy, sub-acid, sprightly; stem, long, in a deep cavity. It keeps well for an early apple. The tree is an upright, thrifty grower, and very productive. It is said by some to be more subject to attacks from the borer than most other varieties, but we have never observed this in our trees. (See Frontispiece.)

St. Michael Archange Pear.

Synonyms.—Dusnar, Plombgastel, Plumbgastel, Plougastel.

Fruit, above medium to large in size, ovate obtuse pyriform; color, greenish yellow, with considerable brownish red in the sun, and many dull russet specks; stem, stout, often inserted, with a lip; calyx, medium, closed; basin, deep, regular, furrowed, or with compressed ribs; flesh, white, coarse-grained, especially near the core, melting, sweet, juicy, rich aromatic; core, small; seeds, dark brown. Season, September and October.

The St. Michael Archange is a variety of the pear long introduced, and yet comparatively but little known. Wherever it is grown, it is found to steadily gain in favor because of the vigorous, upright form of the tree, its relative hardness, and uniform good quality of its fruit. It is also a productive bearer, and grows well on the quince.—*Horticulturist.*



St. Michael Archange Pear.

My Experience with Tomatoes.

Since 1867, I have bestowed more thought and attention upon horticultural matters than at any former period of my life; and, being very fond of the tomato, I have naturally endeavored to secure each year a liberal supply for family use. I have grown most of the much lauded varieties, (so-called,) some of which I have found to be good, some excellent, and some quite indifferent. I have found also that there are more varieties per catalogue than we ever see in the garden. Among those that I have found the best are the Maupay, Cook's Favorite, and Large Smooth Red. These are excellent, and appear to be well marked varieties. Cedar Hill, Crimson Cluster and Tilden are good, but have too much woody core. The Tilden is a shy bearer, and the Cedar Hill mostly too fond of rotting. The New York Market and Crimson Cluster are the same. But by far the best tomatoes that I have ever grown is a medium sized, round, smooth one long in cultivation here, and one that never had the honor of a place upon any of the catalogues. It is coreless and without creases, and though much smaller than many others, would make as much good meat if the hard, woody core of the others was rejected. I have none of these to sell.

I want some one to tell me what it is that kills the tomato vines. About the time my vines begin to show the young tomato, they will begin to wither and droop, first a single branch, then two or three branches, and at last the whole plant droops and dies. It happens alike to all sorts, in dry or in wet weather, and whether they have been transplanted once, twice, thrice, or not at all. What kills them? No insects are visible, and no signs of punctures upon the root, stem or leaf; and no larva of insects appear at any stage of the decay. Will some one who knows inform me privately, or through this journal, what it is that kills the tomato vines?

Surry C. H., Virginia. B. W. JONES.

[We had, several years ago, an experience similar to that narrated by our correspondent with tomato plants dying without any visible cause, and it occurred both in our garden, where the land was high and the soil sandy, but well enriched with vegetable matter, and in a field at some distance where the land was clayey and moist. We have never been able to ascertain the cause. Can any one give us a clue to it?—Ed.]

A Cheap Grape Trellis.

A correspondent of the *Country Gentleman*, describes a cheap trellis as follows:

Plant the vines in rows, at such distances apart as the character of the soil or growth of the grape requires. Set a stout stake, say three inches in diameter and seven feet high, in the line of

the row, between every two plants. Let the stakes have a fork at the top, and lay along in these forks poles such as are used for Lima beans. Then set similar poles firmly in the ground to the right and left of each plant, lean them over to the stakes, and fasten them at the top by nailing, tying, or in any other way which may be deemed best. After the vine has been pruned, tie up the cane left for bearing to one of the poles, and as the branch intended for bearing next year proceeds in growth, train and tie it up to the other pole; and when it reaches the top, train and tie it to the horizontal pole, where it can be kept out of the way and from dangling about. By this mode of training, the bearing cane will not be smothered up with the dense foliage of its own and the current growing cane, and the two being separated, will admit of easier handling, summer pruning, etc., as well as a considerable saving in cost. The stakes should be of lasting wood, such as locust, cedar, etc., but it is not a matter of much consequence about the poles, as they can be cheaply replaced.

Hardy Co., West Va. I. G. MASK.

Irish Potatoes—Can we Raise them for Winter Use?

We are dependant on the Northern supply for this vegetable during the winter months. Can they be raised and kept here for winter use?

Potatoes, in this latitude, are planted from January to April. Beyond the latter month it is not easy to keep them sound, as they sprout and exhaust their vitality.

They are harvested from May to July. Even those planted as late as possible, are full grown by the latter month. If left in the ground they become watery and worthless. If harvested carefully, allowed to dry off in the shade, and then housed in a cool and dry room, they keep *moderately* well, though many will rot in spite of every precaution; and towards autumn they become more or less shrivelled, and lose the plumpness, which the Northern potato has. They are also disposed to sprout, and thus lose a portion of their starchy matter.

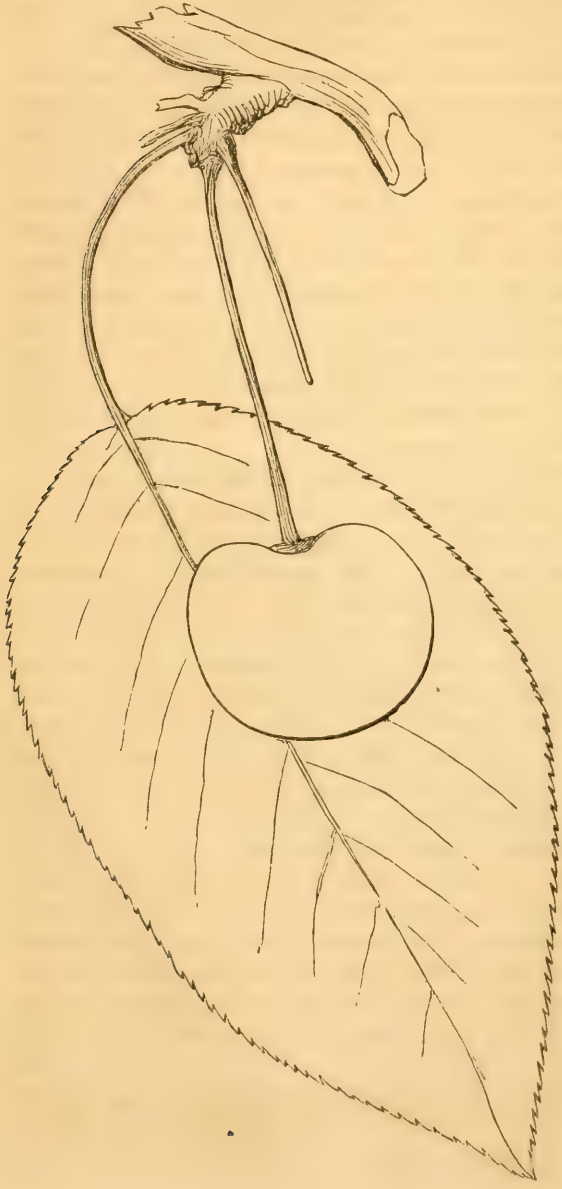
The only way to have good potatoes for winter use, is to plant a second crop about July or August. If they come up well, the vines have full time before frost to mature, and the tubers are fresh, plump and sound, and keep well through the winter without rotting. But just here lies the difficulty, viz: the uncertainty of their germinating in mid-summer.

There seems to be a want of vitality or excitability in the buds when taken freshly from the earth, and unless kept for a time, so that certain chemical changes may take place in the tuber, and the buds become mature, and their excitability increased, but a small proportion will germinate.

I will state a plan which I have adopted with moderate success:

The vines which mature earliest are first harvested. This can be known by the change of color, and their beginning to decline. The tubers are selected from these, of good average size, and as having the *best developed and most mature looking buds*, and spread out carefully in a shaded place, either under cover, or out of doors. The longer they can be kept in this way the more certain they are of germinating. Some varieties seem better adapted

for this purpose than others, though much depends upon the previous season for perfecting and maturing the tubers. Last summer, among several different kinds planted in July, the Early Goodrich and Garnet Chili came up best. There seemed to be but little difference whether they were cut or planted whole. They should be planted from middle of July to first of August, in a seed bed like sweet potatoes, and when about four to six inches high, may be set out where they are to grow.



This plan ensures a regular stand, and saves the trouble of preparing more ground than would be occupied if the buds fail to germinate well.

The second crop was harvested early in November, and the potatoes were rather larger than those of the spring planting—sound and healthy. They keep in this way nearly all winter; and, in fact, may be left in the ground and dug out as they are wanted.

H. W. RAVENEL.

Aiken, S. C.

One of the Best Sweet Cherries—Rockport.—F. R. Elliott says: "If I were to select but one variety out of this class of cherries, it would be the Rockport. In habit of tree it is very upright and vigorous, bears young and abundantly a cherry of the largest size, of a rich amber yellow, mostly overshaded and mottled and blotched with rich shades of red. The flesh is juicy, sweet, rich, delicious, half tender. In ripening, it almost immediately follows the Early Purple Guigne."

More Experience with Turnips.

An article in the February number of THE RURAL CAROLINIAN, in which your correspondent, Robert Chisolm, gives his experience with turnips, suggested to us the fact that we also "had an experience" on the subject of turnips, that might not be uninteresting to your readers. As to varieties, we only planted two, and these very common ones. The White Flat Dutch and Purple Top. I cannot keep the run of the seedsmen's catalogues, nor their almost infinite varieties. If the "White French" and "Waite's Eclipse" are better than all the rest, I want them. I propose now, however, to inform your readers, that so far as the writer's experience goes, Paris has surrendered and the "*White French*" must make another struggle before their superiority over the "*Flat Dutch*" can be admitted as unquestionable.

I planted this year about one-fourth of an acre in turnips. The ground was well manured in the spring with stable manure alone, and planted in okra, Irish potatoes and tomatoes; these were all cleared off by the first of August, when the ground was thoroughly broken up, and a top dressing of "*Langdon's Fertilizer*," applied at the rate of about five or six hundred pounds to the acre. The turnips were planted in drills, and thinned out gradually, as they grew larger. The planting was done at intervals of about two weeks from August to the first of October, so as to secure a succession of fresh and growing turnips for the market.

By the middle of January, the whole crop was off the ground, and it is now freshly manured, broken up, and ready for this spring's planting. No difference, that was at all marked, was apparent either in the size of the two varieties planted, or the amount produced. Both seemed equally productive, and each produced some specimens, that would weigh one and two pounds, and were twenty and thirty inches in circumference.

The first sowing of turnips where they grow and mature under the hot sun early in the fall, are always bitter, both North and South; and if there is any difference in the several varieties, we have not yet found it out. Rapid growth, and cool weather, with light, white frosts, are essential to the maximum of tenderness and sweetness, both in the turnip proper and the Ruta Baga.

My turnips were sold by the dozen, and I neglected to ascertain how many dozen would make a bushel; but I sold 650 dozen, at twenty cents per dozen, making $130 for one-fourth of an acre, or $520 per acre—and this the second crop—following okra, potatoes (Irish) and tomatoes planted in March. "If any body's experience with turnips" is more satisfactory than ours last fall, that "body" feels very comfortable, and will join us in a hurrah, for the "Bonny South-Land," where it is always summer, and "spring time and harvest *come twice in the year.*"

Where can we get a tried variety of spring turnips that we can sow now?

J. DENNIS WOLFE.

Pensacola, Fla., February 6th, 1871.

Horticultural Miscellany.

CHANGING THE COLOR OF FLOWERS.

The *Mirror of Science* says, that a case is known of a yellow primrose which, when planted in a rich soil, had the flowers changed to a brilliant, purple. It also says that charcoal adds great brilliancy to the colors of dahlias, roses, and petunias; carbonate of soda reddens pink hyacinths, and phosphate of soda changes the colors of many plants.

BEAUTY OF THE COLEUS.

This is a beautiful leaf-plant. Its peculiar marking of crimson, green and bronze, makes a strange and agreeable contrast, in groups, or along the borders of the flower garden. The beauty of the plant consists entirely in the leaf, the flowers being of no consequence. It is very tender, and should be housed in the winter. If planted out in April or May, it forms a beautiful spreading plant by September, about two feet high. It should be planted in the shade, as the colors will then be more brilliant.

SALT WATER FOR STRAWBERRIES.

We have learned from a practical fruit raiser, (the Norfolk *Virginian* says,) that during an overflow from an extraordinary storm a strawberry bed was partially covered with brackish water at the time when fruit was forming, and also that the occurrence stimulated the vines to greater perfection of fruit and general vigor. This discovery may prove of immense advantage to fruit raisers in the vicinity of salt water.

THE OHIA, OR SANDWICH ISLAND APPLE.

The *Ohia*, a juicy red apple, sweet, but somewhat insipid, (according to a correspondent of the *Country Gentleman*,) is indigenous and very abundant in the Sandwich Islands. In some locations the forests are largely composed of this fruit-bearing tree—and at the season of fruitage the woods present the appearance of a vast orchard. This sight is to be seen only in a few places, remote from the usual routes of travel. The valleys on all the islands have this tree scattered among them, and the Ohia apple, in its season, is peddled about the streets of the towns.

Tomatoes from Cuttings.—Geo. Henning, Saratoga, N. Y., plants his tomato seeds in January and February, and when the plants are five or six inches high, cuts off the tops just above the seed-leaves, and sets them out as cuttings in a properly prepared hot-bed, where they take root and grow. In April they are transplanted to cold frames, and finally set out in the open ground. Mr. Henning claims that by this treatment the plants have better roots than when allowed to retain their original ones, and that they bear earlier and are more productive.

Dairy and Stock Department.

Is the South a Stock Country?

The hurly burly, topsy turvy method the Southern people have of doing almost everything, unfits them for raising stock, even though their country were well adapted to this branch of agriculture. There is a routine through which we go in planting, cultivating and harvesting a cotton and corn crop, and in scratching in and cradling a small grain crop, that must appear farcical to experienced agriculturists from older and more thickly settled countries. Everything else on the plantation must be subservient to this routine, and every moment of attention paid to the patient animals that do not draw the plough is generally considered an interruption that causes loss. To feed a milch cow, is a sort of contract usually—I'll feed you and you pay me back in milk. But to house and feed dry cattle is a profitless luxury that interferes too much with the thought-to-be necessary duties of the plantation. To build a common cow shed is always a trouble and expense, but to erect a gin house costing as much as the owner's dwelling is a thing of course, and, therefore, involves neither expense nor trouble. How common all over the West are three story gin houses, and yet how uncommon are even ordinary shelters, under which cattle may be protected from wintry winds and rains?

Wedded to the fleecy king, impoverished by the war, and worse than bankrupt from bad management and bad farming, this generation of Southern planters will furnish but isolated examples of successful stock raisers. Perhaps it is well that this is so, for the conversion of any large portion of the South from cotton planting to stock raising, would introduce cares and troubles that would be disastrous to those engaged in this new enterprise.

The normal condition of almost all animals seems to be a state of perfect health. But their subjection to that treatment which man, and not nature, conceives to be the most suitable, superinduces diseases, which in the form of epidemics often destroy in a few weeks the anticipated annual income of the owner. Where just enough cattle are raised to supply the home demand, disease should be unknown. True the "hollow horn," which nine cases in ten means *hollow belly*, occasionally makes the milk "mauma" insist upon the application of the gimlet; this done, a genuine sympathy is aroused, a little more food is given, kind treatment administered, and presently "Suky" is herself again.

The irregular feeding and general improper treatment to which Southern cattle are subjected, will cause fever, or produce spasms and fatal cholic; and their inhuman exposure sometimes results in incurable glandular affections. But when properly cared for, Southern cattle seem to be of all animals the

most hardy. At certain seasons of the year they are infested with lice, or ticks; but these may be easily removed by rubbing the spine, shoulders and flanks with kerosene oil. I recommended this treatment once to a farmer, who owned a very thin cow covered with vermin. He literally washed her in kerosene, and she died in twenty-four hours. For many years I gave weekly lickings of salt, sulphur and meal. The kerosene is more efficient and less trouble. An ointment, made of lard and a decoction of tobacco, applied as the kerosene, will effect the same end. Sometimes a cow "loses her cud," is unable to ruminate; I have relieved them by giving an artificial bolus of meal and alum-water. This astringent seems to cause a natural contraction of the muscles of the lower end of the throat, (esophagus,) and soon healthy action is restored. For cholic or spasms from over-eating, a drench of equal parts of whiskey, melted lard and salt water, or an injection of castor oil, and, in stubborn cases, of tobacco juice, are effective cures. As mentioned in a previous article, I have known surgical operations to be performed by making an incision through the loin between the hip and rib into the paunch, and its contents mechanically extracted. This is a remedy to which I have never resorted.

I think it questionable whether Murrain, Redwater or Blackwater, or any other of these terrible epidemics which are sometimes so destructive in stock countries, ever have prevailed amongst Southern cattle. Strange to say, herds of splendid cattle driven from Texas to the Northern States are often attacked by these diseases, or something worse, while *in transitu*. And the most serious consequences of such an attack is, that it is often communicated to the stock of the country through which these droves pass, by their drinking, within twenty-four hours, from the branches through which these infected Texas cattle have waded. But as this disease never attacks the herd until they have been subjected to the harsh treatment incident to driving, herding, and railroad transportation, it cannot be said to be indigenous to them. So common are these epidemical attacks, that some of the North-western States have laws preventing the passage of Texas cattle through their confines, except at certain seasons of the year, and then within so many hours.

This latter idea, for the sake of humanity, should be incorporated in laws regulating the transportation of stock through every State in the Union. No car load of cattle was ever transported one hundred miles without unnecessary discomfort and suffering to the poor brutes. It has always been a matter of surprise to me why railroad corporations, that keep regular stock cars, do not have them finished with suitable hay racks, and watering troughs for the comfort of the stock. They could be fed and watered when first shipped, and the sight of food and water would calm their excitement sufficiently to prevent that gaunt appearance they usually present at their journey's end.

Occasional perfect quiet is absolutely necessary for the healthfulness of all ruminating animals. Unless the cow is priviledged to "chew her cud" in peace, she will not thrive, and yet how few of our milk-maids or stock-minders

comprehend the *rationale* of this mechanical operation! Not to be technical, the cow has four stomachs: into her first, or paunch, she swallows the unmasticated food simply prepared for deglutition by being besmeared with saliva; liquid food is swallowed immediately into the second stomach; by the action of these two stomachs maceration is produced, where, by a sort of belching effort, a mouthful of food is thrown up into the jaws to be masticated thoroughly and swallowed again, now going into the third stomach, usually known as the "manifolds:" from this, the still further macerated food is ejected and passes into the fourth and last stomach for complete digestion. This fourth stomach, in young ruminating animals, is usually known as "runnet," and is used in coagulating milk to make cheese. It is evident this complicated digestion cannot be effected properly without a certain degree of rest and quiet, not necessary to other animals.

This same quiet and rest, gentle and kind treatment, is necessary to insure the heaviest secretion of pure and rich milk. Cows that are kept excited and shy from ill treatment, will never fully develope their milking qualities; hence, the same cow, in the hands of two different persons, may prove herself to the one a copious and to the other a scant milker. The operation of milking should always be done gently, but quickly, and as long as a drop of milk can be drawn from the udder, the cow should be milked. The last milk, usually known as the "strippings," is always the richest. The practice of leaving one teat for the calf is unwise. Better allow the calf to tug at an empty udder, which nature prompts it to do, and then feed it, rather than lose one-fourth or less of the cow's milk. In stock countries, the calf of a few days old, is often taken from the mother, and thus the cow may be kept milking for years. This idea should be utilized by our village and city readers.

D. WYATT AIKEN.

The Angora Goat in the South.

As I have had some acquaintance with this animal, I have concluded to respond to your request for information.

The Angora, Cashmere, or Thibet goat, as it is variously called, is a beautiful animal. His hair is long, fine and glossy. The part resembling fur is next to the skin, and the mode of saving it is by combing in the spring, before he sheds his coat, and later his fleece; if not taken off in time, he will rub off the entire coat, except that on the mane, tail, and thighs. The hair cannot be spun on the common spinning-wheel.

I had a full-bred buck, from Dr. J. B. Davis, to breed from. This goat could come the nearest to climbing a tree of any hoofed animal with which I am acquainted. The Kentuckian said that he would bet his "pile" that the French Broad River could knock more bark off a saw-log than any other stream, and that a "down-easter" would reach nearer the brink of Vesuvius (or the next place) than any other creature; so I will "go my pile" on the

Angora goat, that he can bark more apple, peach, or other choice trees than any other animal. It is no use to talk about a "zig-zag fence" keeping them inclosed. I never could fence mine, until I put him and his flock on an island.

The kids are nice eating, and the half-bred is the more delicate and finer flavored. They are prolific; and if I were in a mountain region, or had a range in which I could control them, I would have them at a reasonable cost, and certainly so if I could get a contract at $1 per lb. for mohair. The man, however, who bases his profits on five or six pounds of hair to the goat, will be disappointed. It is the fur-like coating that is so valued, and of which fine shawls are manufactured.

My reason for responding to your call for information is this: I have often been misled by long descriptions and pedigrees, or by two feet of certificate, attached to some gin, cotton planter, fertilizer, or animal.

When washed and combed daily, the Angora goat will make a beautiful pet, but was rather a costly one when first introduced at $500.

HENRY W. PARR.

Broad River, Fairfield County, S. C.

Bee Hives and Bee "Charming."

In the January number of THE RURAL CAROLINIAN, I see some enquiries on the subject of bee culture, with the request that some correspondent may answer.

I have been engaged in the culture of bees for several years, and have examined most of the improved hives—Langstroth's, Quinby's and others—and feel safe in recommending The "American Bee Hive" as the most economical and best adapted to the wants of practical bee keepers. It is cheap in construction, ornamental in appearance, and embraces everything requisite to give perfect control over the bees, in all of the operations of scientific apiculture, such as making artificial swarms, queen raising, etc., besides, it affords the best facilities for feeding bees when necessary, and for storing surplus honey in boxes, of convenient size for shipment to market.

Any good mechanic can make this hive, at a cost of four or five dollars, depending on the price of lumber and labor. It contains twenty-five feet of lumber; and a good workman will turn out one hive a day by hand labor. This hive is covered by three patents. The price of a farm right, to make and use any number on any one farm, is five dollars.

The secret of "charming" bees, is to subdue them with a little smoke from burning rags, or from a pipe or cigar. Smoke them gently until they retreat into the hive, then jar the hive by striking it with the hand, or by rapping on it with a small stick. The bees will soon set up a hum of submission, then the danger of being stung is over. When bees are frightened, they rush to their stores and fill their sacks with honey, upon the wise principle

of saving what they can in time of disaster; once filled, they will not sting, unless compelled to do so by being mashed. Young swarms are not apt to sting, because they fill their sacks for the journey before leaving the hive. To make them still more amiable, sprinkle them with sweetened water before attempting to hive them. Spread a sheet on the ground, in a shady place, set the hive on it, and shake the bees in front of it, and they will be quick to take possession, if the hive is clean and cool. Avoid making quick motions when working with bees, and never fight at one, if you do not want to get the worst of it. New beginners may wear a bee hat, made by sewing coarse milinet around the brim of a summer hat and tuck inside the vest collar. To protect the hands, india rubber gloves are best; but coarse woolen gloves do very well.

I am satisfied that honey-making is a lucrative branch of industry; and why should not this land of sun and flowers reap its share of the sweet harvest? Only for the want of enterprise.

I shall be glad to give any further information on the subject, either through THE RURAL CAROLINIAN, or by private letter.

P. J. QUATTLEBAUM.

Ridge Springs, S. C., February 5th, 1871.

Department of Natural History.

Specimens of insects, securely packed, (according to instructions given in our October number,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. CHARLES R. DODGE, Department of Agriculture, Washington, D. C.

Trichina Spiralis.

Of all the human parasites, this is by far the most dangerous. In the larval state it lives in the muscles of rats, mice, cats, dogs, rabbits, swine, and many other animals; occasionally it is found in sheep and cattle, though man is infected almost universally from the hog. The mature male is smaller than the female, measuring only one-eighteenth of an inch in length. The body is slender, smooth and rounded, and the head is small, narrow and pointed. The

female is more robust, when mature measuring about one-eighth of an inch, is viviparous, the uterus occupying most of the body. The sexes pair as soon as mature, and the females give birth to living young in less than a week from the time they are taken into the stomach. The larvæ are minute and hair-like, and as soon as set free from the parent, pierce the intestinal walls, and keep up their wanderings through the system until the muscles are reached, or, entering the circulation, are carried by the blood to all parts of the body. One female is capable of producing a brood of from 500 to 1,000 young worms.

One ounce of raw pork may contain a quarter of a million of these worms, and it was estimated by Leuckart that an ounce of the flesh of an infested cat must have contained 325,000. The immature *Trichinæ* are one-twenty-fifth of an inch in length, and, after a few weeks, are enclosed in minute roundish or oval cysts, which become, in course of time, calcified by a deposit of carbonate of lime. In these little enclosures the minute worms are coiled up in two or three turns, as seen in the figure, magnified forty-five diameters.

The severity of the attack depends entirely upon the number of *Trichinæ* taken into the stomach. Its duration may extend from a few weeks to several months, though in extreme cases, death occurs in from five to fifty days. The symptoms, which are various, may be confounded with typhoid fever, rheumatic fever, and many other diseases. The principal symptoms are soreness and swelling in the muscles, rheumatic pains, greatly accelerated pulse, lassitude, nausea and vomiting, and frequently diarrhœa, while the mature worms still remain in the intestinal canal, and, in severe cases, paralysis. All that can be done for the relief of the patient, is to keep up the general health until nature may have time to effect a cure. The maxim that an ounce of preventive is worth a pound of cure, is never more true than in the case of this disease. All pork should be thoroughly cooked, and nothing but thorough cooking will destroy these parasites when they exist. Fatal cases have resulted from eating pork that had been boiled two hours, and even roast pork and sausage have caused the disease. Smoked ham and smoked or dried sausage may contain millions of *Trichinæ*, and can only be rendered a perfectly safe article of food by being *always well cooked.*

New Remedies for Insects.

Cabbage Worms.—The last year has been a hard one to cabbage growers. In the South a "green caterpillar," (I think there must be more than *one* species,) has been very destructive, and in the North the imported *Pieris*, (*P. rapæ*,) which does not occur in the South, has caused even more damage. Many remedies have been proposed and tried, with almost as many failures. P. T. Quinn, author of Pear Culture for Profit, however, recommends the following, which was used with great success during the last season in the vicinity of New York: Twenty parts superphosphate, made with slush acid,

one part carbolic powder, three parts air-slaked lime, mixed well together and dusted into each head four times, at periods of four days apart. On a crop of 75,000 heads he lost less than five per cent.

If Southern cabbage worms are as abundant the coming season as they were last year, it will be well to give this remedy a thorough trial. Planters should experiment and give the results of their experiments, that all may profit by them.

For Insects in General.—The following mixture, which has been used in England, is recommended for the destruction of scale insects, *aphidæ*, the mealy bug, red spider, thrips, and similar small insects. Though especially useful in destroying green-house pests, it may be used upon trees and shrubs, although much care is required in making it the right degree of strength, and in thorough syringing afterwards. It is as follows: Two oz. flowers of sulphur, worked into a paste with a little water, two oz. washing soda, half oz. common *shag* tobacco, and a piece of quick lime about the size of a duck's egg; put them all into a vessel with one gallon of water, boil, and stir for a quarter of an hour. After it has settled, and become cold and clear, it should be poured off, leaving the sediment.

In using it, add more or less water, according to the strength or delicacy of the plant to be treated. A jar of the mixture will keep for some time.

Answers to Correspondents.

Entomological Queries.—R. C., in February number of The Rural Carolinian. The warm dry weather of the past season was particularly favorable to some kinds of insects. Cabbage insects have flourished all over the country. The corn worm on the ear (*Heliothis armigera*) has proved very destructive in some localities. It has also caused considerable trouble to cotton planters, together with the cotton army worm, in several counties in Texas, though cotton has suffered very little in other parts of the South. Grasshoppers were very destructive.

Why not make use of your Jamestown weeds? A drop or so of any poisonous mixture placed in each flower would kill all the horn blowers that came under its influence, without giving very many of them a chance to deposit their eggs. Then it saves the trouble of despatching them one by one.

The best known remedy we can offer for plant lice of any kind, (*Aphidæ*,) is a solution of whale oil or chrysilic soapsuds, or a strong decoction of quassia sprinkled over the plants. We would be most happy to make the acquaintance of your okra pests.

Cabbage Worms.—D. H. J., Charleston. I would like more of the green worms you sent last fall, as the only *one* that reached the pupa state has since died. I think they were all dstroyed by internal parasites.

Errata.—Page 300, line 15, for *Curculionedæ* read *Curculionidæ;* line 29, for *Cocus*, read *Coccus;* line 30, for *Cecidomfia*, read *Cecidomyia;* line 33, for *Lepedoptera*, read *Lepidoptera.*

Carbolic Acid in Tanning.—A patent was not long since taken out in Paris for the application of carbolic acid as a preventive of putrefaction in the different branches of leather manufacture, a few thousandth parts of carbolic acid added to the liquid used in tanning, preventing the rotting of the skin, it is said, during the process of preparation.

Texas Grasses—Mesquit, (Buchloa Dactyloides.)

This is one of the best grasses of Texas for pasturage, if not the very best, being perennial, it affords food for stock both summer and winter. Even in midwinter it presents a green covering over many hills and prairies in this vicinity. It is, also, the best grass for lawns indigenous to Texas. It is not confined to the State, but extends over the Western plains to the Rocky Mountains, as far North as Missouri, and, perhaps, farther. It thrives on every variety of soil, growing on poor, gravelly uplands, and also in rich river bottoms, but it mostly abounds on the prairies among the mesquit trees, scattered over their surface throughout a large portion of our State, whence it is commonly called mesquit grass in Texas. This name, however, is given to two or three other species of grass which are often found associated with it. On the Western plains it is known by the name of buffalo grass, hence its botanic name (*Buchloa.*)

It seldom grows more than six or eight inches in height, in flowering stems, but its leaves are long. It also grows by stolons or runners, by which means it extends rapidly and soon covers the surface. Unlike most grasses it is *diœcious*, that is, it has male and female flowers on different stems; the female flowers and seeds are near the root, and seldom seen or noticed unless search is made for them. On this account its true nature was long unknown to botanists, its male flowers only having been collected. I have been told by many people in Texas that it does not bear seed. When in flower it can easily be known from every other species of mesquit by its upright staminate or sterile flowering stems, with one or two short, horizontally extending branches, one to two inches long, densely crowded with yellowish brown florets. A gentleman in Georgia once wrote to his friend here to send him some seeds of this mesquit. The friend here sent his boys forth to collect them, and the boys began to gather the male flowers, but before progressing far their father consulted me, and he learned their true character. The seeds were not sent.

The *Buchloa* is not difficult to eradicate, nor is it ever troublesome in cultivated fields, because it has so few seeds. No one need fear introducing it on his plantation, either for lawns or pasturage. All kinds of stock are extremely fond of it, from which we infer that it is very sweet and nutritious. To the people of Texas it is certainly one of the most valuable grasses for pasturage, yielding as it does an abundance of food both winter and summer, nor do the drouths of summer hurt its vitality. In extreme drouths often all the grasses seem dead, but a rain will make this mesquit grass green and growing in a few hours. Even when dry, weather beaten, and seemingly dead, it is still good food for stock.

S. B. BUCKLEY.

Austin, Texas, January 30, 1871.

Department of Mining and the Mechanic Arts.

A Contribution to the History of the Charleston Phosphates.

If it has been worth while to write anything in relation to discovering the value of the phosphate deposits near Charleston, it seems to me well worth while to do it thoroughly.

As in war there is nothing small, everything being important, so in peace many things seemingly of little moment are of great value.

In the autumn of 1859 my brother-in-law, Mr. T. P. Allen, proposed that we, together with my son, Melvin P. Hatch, then in Europe, should utilize the refuse matter of Charleston for fertilizers. I had been selling Columbian Guano; and, for security to my customers, had engaged Professor C. U. Shepard to examine each cargo as it arrived. We called Professor Shepard to our consultation, and determined to prosecute the new work with Professor S. as our chemist. Mr. Allen retired from the concern before active operations were begun. I furnished the capital, as special partner, and my son, as general partner, conducted the business. We used mainly bones, charcoal, ammoniacal liquors, ashes, refuse from soap-boilers, burnt rice, sulphuric acid and Peruvian Guano, making a fertilizer which we thought worth thirty dollars a ton, and sold for that price. It was in every way a success.

We gathered enough bones to have lasted us, perhaps, with increased business, another year; but seeing that the supply of phosphates would be short from this source, Professor Shepard advised that we should look to the Ashley River marl or rocks for a supply, saying he felt sure that these would prove to be richer in phosphates than was usually supposed. No sooner proposed than acted on. In the spring of 1860 we went to Maj. Vardell's place, finding the rock there and elsewhere along our route.

Whilst engaged in the examinations which followed, I told Mr. J. D. Aiken that we hoped we could use these materials in our enterprise. Professor Shepard, with my son, made other examinations.

Subsequently, making up my mind that the best place from which to obtain supplies was Gen. Brisbane's plantation, now the site of the Wando works. I caused to be gathered there a quantity of the rocks or nodules, which I sent to Prof. Shepard, at New Haven. I did this to make sure that the material at this place was of such quality as would suit our purposes and make the purchase of the land safe. When I met Prof. Shepard in the autumn of 1860, he said in reply to my inquiry as to quality:

"I found it richer far than I expected; so rich, that with it we can drive all other fertilizers out of this market, and may invade foreign markets."

From that time I fully determined to push this business much as it has since been done; and for this purpose I engaged, through Mr. Henerey, before the war, a steam engine.

Once during the war my son and I rode along the banks of the Ashley, looking in at various places for sixteen miles, to see if we could safely purchase. Meanwhile we agreed to close in with any offers of land that might be made to us. We also returned that day through the pine lands looking for healthy localities, with a view to the future for this business, examining particularly the ten mile ridge. It was the only day I took from military service for attention to future fortune. I do not refer to work done in the field when for a few days at a time I was at home,—making food was a part of the fight.

After the war, thinking the country too poor to offer inducements for business, and too poor to pay for fertilizers, I, on consultation with Mr. Allen, decided against either of these things for the time; and feeling that hard work was the order of the day, came up into North Carolina intent on taming the mountains!

After I was committed here, I found to my surprise, on a visit to Charleston, that our people were buying fertilizers largely from the North.

Consulting with Professor Shepard, (unable at the moment to take hold myself,) a partnership was formed between Major Vardell and Mr. Blake, of New Haven. Mr. B. was to furnish capital; and the firm proposed to use a quartz crusher, the invention of his father, for crushing the material. I sold them the materials already gathered,—land, buildings, steam engine, etc. Going South to spend a few days at Christmas, Mr. Blake was unfortunately drowned; and with his death that effort ended.

During the war I mentioned to Mr. John R. Dukes that Professor Shepard had remarked to me, in relation to the Ashley River deposits: "That about nine miles from Charleston there was a deposit which reminded him very much of the Columbian Guano," and from this sprung the search for these nodules which has resulted, through the agency of Drs. Ravenel and Pratt, in this valuable discovery. The truth is, that the first step was taken, when Mr. Allen proposed to utilize the refuse matter of Charleston.

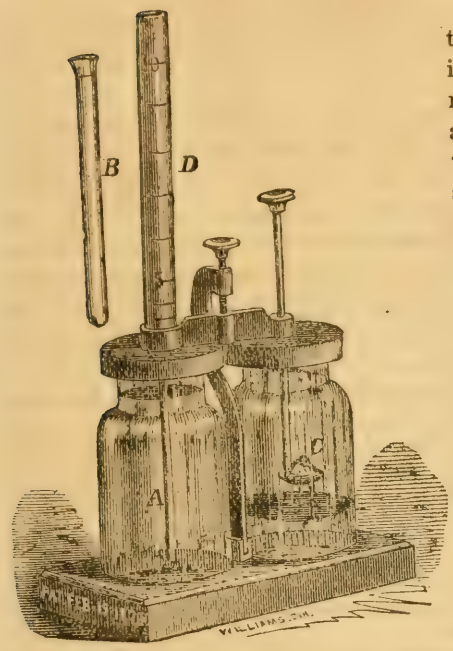
Mr. Allen made the germinal suggestion. Professor Shepard, as chemist, pointed out the source of needful supply, *and proved its value.* He did this in advance of all others. In advance, please bear in mind, of Professor Ansted, whose book we did not need, even in 1864, to give us the thought. We were convinced in 1860, that with the Ashley River phosphates, we could compete with the world in fertilizers.

Let us give to Mr. Allen that which is his due, and to Professor Shepard his,—that as a scientific man he pointed out and predicted their future use.

LEWIS M. HATCH.

Asheville, Buncombe County, N. C.

Twitchell's Acidometer.



During the last State Fair held in this city, I had the pleasure of receiving by express one of these instruments from the inventor, and after assisting the committee, to whom was committed the testing of wines and cordials, and after submitting it to a thorough trial on some ninety or one hundred varieties of wines on exhibition, I confidently recommend it to the readers of THE RURAL CAROLINIAN, as the only safe and practical instrument of the kind yet submitted to the wine producer, and which any person of common intelligence can use with perfect safety. The inventor says of it, "The action of this instrument is based upon the well established fact, that, when an excess of carbonate is added to a liquid containing an acid, there will be given off carbonic acid gas in exact proportion to the amount of acid there was in the liquid; and, by measuring the volume of the gas given off, the amount of acid in the liquid can be determined, while the instrument is so divided as to give the exact per cent. of acid, without any calculation or table of corrections."

The grape-growing public have long felt the want of a simple, safe and inexpensive instrument, as this is in its application, and in a future number I will furnish some directions for its use.

ALEX. Y. LEE.
Arch't. & Civ. Eng'r.

Columbia, S. C., December 1st, 1870.

Ericsson's Solar Engine.

Captain Ericsson, of "monitor" fame, and a distinguished engineer and inventor, has at last, as we are told, perfected his Solar Engine, which is calculated to utilize the rays of the sun for the purpose of generating steam; and which, it is believed, will be of vast service in tropical and semi-tropical countries, where the sunshine is intense, and almost unremitting during the day. The following is the inventor's own description of the engine:

The solar engine is composed of three distinct parts. The engine, the steam generator and the mechanism, by means of which the feeble intensity of the sun's rays is augmented to such a degree that the resulting temperature will exceed that of the lowest pressure of steam admissible in an efficient engine. As to the motor itself, it suffices to say, that it is essentially a modern steam engine utilizing, to the fullest extent, the mechanical energy of the steam generated by the concentrated solar rays.

Regarding the steam generator, it will only be necessary to state that it

is not exposed to the action of fire, clinkers or soot, and, therefore, can only suffer from the slow action of ordinary oxidation. We have lastly to consider the efficiency of the mechanism, by means of which the solar heat is concentrated and the temperature raised above that of the water in the steam generator.

Regarding this mechanism, it will be asked: Is it costly? Is it heavy and bulky so as to render transportation difficult? And finally, is it liable to derangement and expensive to keep in order? I answer: The cost is moderate. The weight is small. As to the bulk, this apparatus is composed of small parts readily put together.

Regarding durability, the fact need only be pointed out, that certain metals however thin, if kept dry, may be exposed to the sun's rays during an indefinite length of time without appreciable deterioration. Another question will be asked, whether the solar engine will answer as well on a large as it does on a small scale?' The following reply will dispose of this query. It is intended to enlarge in future the size of the apparatus, by means of which the solar intensity has been successfully concentrated and the temperature sufficiently elevated to generate steam for the engines which have been built. The maximum size adopted has been adequate to utilize the radiant heat of a sunbeam of thirty-five square feet section. The employment of an increased number of such structures will, therefore, be resorted to when greater power is wanted, as we increase the number of hands when we desire to perform an aditional amount of work.

Preparation of the Ramie Fibre.

A great deal of interest (the New Orleans *Times* says) is felt by our agricultural and mercantile readers in the new textile plant known as the Ramie. A year or two ago single plants sold in this vicinity at the rate of one dollar each, but they have since been regarded by our planters rather as a curiosity than as an object of material interest, there being no economical agencies provided for preparing the staple for market. We have already stated that Mr. Emile Lefranc, of this city, has recently patented a machine which has proved entirely successful in separating the fibre from the woody matter and outer bark; and to show that American ingenuity has been turned in the same direction in other quarters, we extract the following from a letter received by Mr. Lefranc, from a gentleman residing in Brooklyn, N. Y.:

"I am glad to hear you have succeeded in freeing the fibre from the gum coloring matter. You speak of sending me a parcel of the fibre in a few days. Do not send more than one half-pound, and send it per mail, as it will reach me sooner and costs less than by express. When the sample reaches me, I will prepare it by my process and return it to you. In regard to the cost of preparing the fibre in staple of suitable lengths for spinning upon cotton, fine wool, worsted or flax machinery, I can safely say, as the result of my experience, that twenty-five cents per pound (and forty cents per pound, including the cost of raw materials and waste) would be very near the cost—certainly not more—and would sell when so prepared for $1 per pound, as fast as it could be produced; and when prepared for spinning and imitating silks, could be sold for three or four times that price. My process is both mechanical and chemical.

"The amount of capital required to fit out the machinery, apparatus and other expenses, (not including premises and power,) to prepare 6,000 pounds per week, would probably not exceed $10,000.

"L. W. WRIGHT."

THE RURAL CAROLINIAN.

VOL. II.] CHARLESTON, S. C., MARCH, 1871. No. VI.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

UP THE ASHLEY RIVER.

One of the finest regions of country in the South is that bordering the Ashley River. Land as fertile as the richest valleys of the West; a navigable stream moved by every tide; scenery of peculiar and wonderful beauty; and a climate singularly soft and genial, combine to make it almost irresistably attractive.

The early settlers of South Carolina were not blind to the beauties and advantages of this region, and the river was formerly skirted with magnificent cultivated estates and adorned with fine mansions, presided over by taste and culture, and offering, on all occasions and without stint, the most graceful and cordial hospitality.

What a change!

This fine country is now a land of ruins, and, with the exception of its phosphate mining settlements, a wilderness! Follow any of the numerous long avenues of grand, moss-draped live-oaks, which formerly led to the hospitable halls of which we have spoken, and you come at their head to a mass of blackened ruins, surrounded by abandoned gardens and fields, upon which the luxuriant semi-tropical forest growth of the country is rapidly encroaching. It is thus that kind Nature hastens to hide with her friendly drapery the rough, disfiguring foot-prints of ruthless War.

These reflections have been suggested by a recent trip into this region, made with the special object of visiting the mines of the Palmetto Mining and Manufacturing Company, situated some sixteen miles up the river, a visit which, of itself, might furnish the subject for a long article, but which we must dismiss with a paragraph.

The Phosphate works, situated at intervals along the shores of the river, on both sides, break somewhat abruptly but not unpleasantly, the solitude of the forests, old fields and ruins of this once teeming region. Here we found every indication of enterprise, industry and skill, with the proper provisions for the comfort of all engaged in the operations of the place. Comfortable cabins for the negroes, white cottages, a country "store," a phosphate washer in operation, and a large mill in process of erection, give the place the air of a new and thriving Western settlement. The phosphatic nodules are here found embedded in clay, and are of the best quality. We are indebted to Mr. Thomas D. Eason, the enterprising and energetic President of the Company, for many kind attentions at the mines, as well as for the opportunity of visiting Old Dorchester's ruined Church and Fort, and the celebrated Middleton Barony, about both of which, we are tempted to write many pages; but we must refrain for the present, from trespassing further upon the space allotted to more practical matters.

THE PATRONS OF HUSBANDRY.

In response to numerous inquiries in regard to this organization, we publish the following official circular of the National Grange. It will answer briefly most of the questions of our correspondents, and, we hope, attract further attention to the Order, a nd a careful examination of its claims. Believing that it is destined to be a most efficient means of promoting agricultural progress, and elevating, intellectually and morally, the agriculturists of our country, we are glad to know that it is attracting so much attention here. Furnishing a bond of

union, and a guarantee of just dealing, good fellowship, and mutual help among its members, it would seem to commend itself particularly to our people at this time:

It is evident to all intelligent minds that the time has come when those engaged in rural pursuits should have an organization devoted entirely to their interests. Such it is intended to make the Order of Patrons. It was instituted in 1867; its growth is unprecedented in the history of secret associations, and it is acknowledged one of the most useful and powerful organizations in the United States. Its grand objects are not only general improvement in husbandry, but to increase the general happiness, wealth and prosperity of the country. It is founded upon the axioms that the products of the soil comprise the basis of all wealth; that individual happiness depends upon general prosperity, and that the wealth of a country depends upon the general intelligence and mental culture of the producing classes.

In the meetings of this Order, all but members are excluded, and there is in its proceedings a symbolized ritual, pleasing, beautiful, and appropriate, which is designed not only to charm the fancy, but to cultivate and enlarge the mind and purify the heart, having, at the same time, strict adaptation to rural pursuits.

The secrecy of the ritual and proceedings of the Order have been adopted chiefly for the purpose of accomplishing desired efficiency, extension and unity, and to secure among its members, in the internal working of the Order, confidence, harmony and security.

Women are admitted to full membership, and we solicit the coöperation of woman, because of a conviction that without her aid, success will be less certain and decided. Much might be said in this connection, but every husband and brother knows that where he can be accompanied by his wife or sister, no lessons will be learned but those of purity and truth.

The Order of the Patrons of Husbandry will accomplish a thorough and systematic organization among farmers and horticulturists throughout the United States, and will secure among them intimate social relations and acquaintance with each other, for the advancement and elevation of their pursuits, with an appreciation and protection of their true interests. By such means may be accomplished that which exists throughout the country in all other avocations, and among all other classes—combined coöperative association for individual improvement and common benefit.

Among the advantages which may be derived from the Order, are systematic arrangements for procuring and disseminating, in the most expeditious manner, information relative to crops, demand and supply, prices, markets, and transportation throughout the country; also, for the purchase and exchange of stock, seeds, and desired varieties of plants and trees, and for the purpose of procuring help at home or from abroad, and situations for persons seeking employment; also, for ascertaining and testing the merits of newly invented farming implements, and those not in general use, and for detecting and exposing those that are unworthy, and for protecting, by all available means, the farming interests from fraud and deception, and combinations of every kind.

We ignore all political discussions in the Order; we do not solicit the patronage of any sect, association or individual, upon any grounds whatever, except upon the intrinsic merits of the Order.

The better to secure greater benefits to our members, we desire to establish Granges in every city, town and village in the United States. Information relative to organizing may be obtained by addressing the undersigned, or either of the General Deputies.

O. H. Kelly,
Secretary of the National Grange,
Washington, D. C.

D. H. Jacques,
General Deputy of the National Grange, for South Carolina, Charleston, S. C.

HOW MUCH DOES IT COST?

Can our planters generally tell how much it costs them to grow and prepare for market a pound of cotton lint? At how low a price per pound can cotton be sold and allow the producer a fair profit? Does it pay at twelve cents, or at fourteen, per pound, under the present system of labor?

These are questions of vital importance, but so careless and unsystematic has been the management of most of our planters, that we fear few of them can give us the exact figures. If any can, we should be glad to hear from them on the subject; and we hope that those who have been making cotton without knowing precisely how much they have made or lost on the crop, will begin now to keep a strict account with their cotton fields, debiting them for seed, manure, labor, wear and tear of implements, and interest on the capital employed, and crediting them with the produce in lint and seed, at their net values.

Let us know the lowest price at which it will pay to grow cotton, and then we shall be in a position to act intelligently in the matter.

We are aware, of course, that all cannot arrive at exactly the same results, the cost varying with the circumstances of soil, labor, skill and capital, but from numerous experiments something like a correct average can be deduced.

Gentlemen, let us have the figures!

TO CONTRIBUTORS.

Our contributors have been exceedingly generous of late, in furnishing articles of interest and value for our pages, and we tender them all our hearty thanks for their favors, but we must beg them, when their articles do not appear so soon as could be wished, to exercise the virtue of patience. We have not been able to print in the present number one-half of the matter on hand, but have selected from it such papers as seemed best suited to the season, and most conducive to the wants of our patrons, and the interests of our magazine. We shall try to give all a hearing in future numbers.

Correspondents writing on their own business, or asking for seeds or other favors, *should enclose stamps to prepay our reply.* We are willing and glad to be of service to our patrons in any practicable way, but the mere writing of perhaps a hundred letters per month in reply to personal queries on all sorts of subjects, is no small tax upon our time. The additional expense of the postage should, at least, be spared us.

Mr. John A. Scott, Greenville, Miss., will please accept our thanks for a very acceptable package of seeds.

We are indebted to Mr. Milton Leverett, and others, for Doura Corn, for which we are greatly obliged.

CATALOGUES AND PAMPHLETS.

"Descriptive Catalogue of Plants, No. 3," Elwanger & Barry, Mount Hope Nurseries, Rochester, N. Y. This comes from an old, well known, prompt and trustworthy firm, and contains a full and choice lists of greenhouse, hot-house and bedding plants, elegantly illustrated. This and catalogues of fruits, ornamental trees and shrubs, bulbous flower roots, etc., will be sent to any of our readers on receipt of stamps to prepay postage.

——"Illustrated Catalogue of Seeds and Implements for 1871," Henderson & Flemming, 67 Nassau street, New York. This is one of the most beautiful of the many handsome catalogues received, has two colored plates, and contains lists of every desirable variety of vegetable and flower seeds, new and old. It may be had on application, (inclosing 25 cents,) and Messrs. Henderson & Flemming are trustworthy and honorable seedsmen, who will send good seeds and true to name.

——"Peter Henderson's Spring Catalogue, of New, Rare and Beautiful Plants, for 1871." This comes from the senior partner of the firm of Henderson & Flemming, (author of "Gardening for Profit," who may be addressed at the same place, 67 Nassau street, New York. The colored plates alone are well worth the 25 cents; you must send to get it.

——"Dreer's Garden Calendar, for 1871," containing a select list of seeds and plants, is full and interesting as usual. Mr. Dreer is one of our correspondents and needs no introduction to our readers, who may send freely for his Calendar Catalogue, to No. 714 Chestnut street, Philadelphia.

——"Descriptive Catalogue of Evergreens and Forest Trees," Pinney & Lawrence, Sturgeon Bay, Wis., with an Essay on Evergreens.

——"Mendenhall's Illustrated Catalogue of Seeds and Guide to the Vegetable and Flower Garden," comes from that enthusiastic and enterprising Western florist and seedsman, J. F. Mendenhall, Carmel, Ind. Sent free on application.

——Wm. M. Pinkard, of New Orleans, dealer in cotton seed and fertilizers, sends us a very interesting pamphlet, entitled "How to Double your Crops." Of course the secret lies in the good seed and good manures he has for sale, with the addition of skilful cultivation, etc.

——Col. Jas. L. Tait, publishes an interesting and important "Report on a Section of the Iron and Coal Lands of Alabama." Montgomery, Ala., 1871.

——" Proceedings of the Annual Convention of the South Carolina Agricultural and Mechanical Society, held in Columbia, November 10-12, 1870. Charleston, S. C., Walker, Evans & Cogswell, 1871." In addition to the excellent practical address of the President of the Society, General Johnson Hagood, this pamphlet contains many papers of interest and value, which we commend to our readers for careful reading and preservation for future reference.

——" The Monthly Reports of the Department of Agriculture," come regularly to hand, are perused with great interest, and many important facts gleaned from them for the benefit of our readers. The Department is fortunate in possessing, in Mr. Dodge, so able and industrious a statistician and editor.

——" The Prairie Farmer Annual, for 1871," is a useful little work, issued by the publishers of the *Prairie Farmer*, Chicago, Ill.; price fifty cents.

——We are indebted to Wm. F. Channing, M. D., for " Transactions of the Rhode Island Society for the Encouragement of Domestic Industry in the year 1869," which contains some exceedingly valuable papers on industrial subjects.

——The " Catalogue and Floral Guide," of Hovey & Co., 57 State street, Boston, does credit in typography, illustration and extent of its lists to that old and well known Horticultural and Seed Establishment.

——The "Horticultural Circular" of Peters & Hatch, for the Spring of 1871, shows an excellent assortment of plants and seeds suitable to our climate. Send for it to the Proprietors, No. 303 Main street, Memphis, Tenn.

THE RURAL PRESS.

L'Italia Agricola has been recently added to the list of our foreign exchanges, and is an ably edited and thoroughly scientific and practical publication. We are indebted to it for an appreciative and highly flattering notice of THE RURAL CAROLINIAN, in which our plan for obtaining and diffusing information by means of our Department of Correspondence and Inquiry is particularly commended. *L'Italia Agricola* is published at Milan, Italy, and is the official organ of the Agricultural Association of Lombardy. G. Chizzolini, Editor and Publisher.

—— Georgia adds still another to the list of Southern agricultural papers in the *Farmer and Gardener*, a semi-monthly journal of agriculture, horticulture, and rural life. That it will be an efficient worker in the great field of Southern husbandry, and prove a successful enterprise, the names of E. H. Gray, as publisher, and P. J. Berckmans, as horticultural editor, are a sufficient guarantee. We wish it long life and prosperity. Terms, $1 a year in advance.

—— *The Small Fruit Recorder*, for January, comes to us enlarged and improved in typography style and matter. The editor is a practical man, and writes understandingly about what he personally knows—fruits, vegetables and flowers. (A. M. Purdy, Palmyra, N. Y. Monthly; $1 a year.)

—— *Our Home Journal* is the name of a handsome agricultural and literary weekly paper, lately established in New Orleans. The two or three numbers we have seen are well filled and interesting. (James H. Hummel, 106 Comp street; $3 a year.)

—— Col. Andrew J. Beck, of the *Rural Southerner*, Atlanta, has been appointed General Deputy of the National Grange, Patrons of Husbandry, for the State of Georgia.

—— Col. D. Redmond has retired from the editorial management of the *South-Land*, and is succeeded by Mr. E. F. Russell.

—— *The Gardener's Monthly*, for February, (Thos. Meehan, editor,) has a beautiful chromo plate of Bouvardia Vreelandii, and is well filled, as it always is, with interesting and useful matter. (Philadelphia, Brinckloe & Marrot; $2 a year.)

—— *The California Horticulturist and Floral Magazine* is the name of a new rural publication lately commenced at San Francisco, Cal., of which we shall be glad to say more when we have seen it. " Please exchange."

LITERARY NOTES AND NOTICES.

The Southern Magazine (Baltimore, Murdoch, Browne, & Hill,) takes the place of the *New Eclectic* and *Land we Love*, and keeps up the high standard of the publications it

supercedes. The January and February numbers are before us and compare favorably with the best issues of the previous year. Terms, $4 a year.

——Another volume of Max Müller's "Chips from a German Workshop," completing the work in three, instead of four volumes, as first intended, will soon be published by Scribner & Co. It is especially rich in letters from the late Baron Bunsen, for many years Prussian Ambassador in England.

——The "Fortnightly Review" for January contains an original poem by Shelley, written in 1812-13, never before published, and now edited by W. M. Rossetti. In this number also appears "The Claims of Women," by Viscountess Amberly, daughter-in-law of Earl Russel.

——*The American Artisan* is a weekly journal, devoted to the interests of Artisans and Manufacturers, Inventors and Patentees, and contains numerous original engravings and descriptions of new machinery; notices of all the latest discoveries; instructions in arts and trades; reliable recipes for use in the field, the workshop and the household; practical rules in mechanics and advice to farmers; with weekly articles on "Our Workshops," and others, published—with *portraits*—under the heading of "Sketches of distinguished Inventors, Mechanics and Manufacturers." Brown, Combs & Co., 189 Broadway, New York; $2 a year.

——*Every Boy's Magazine* is a new venture in periodical literature, and if we may judge from the variety, excellence and adaptability of the contents, it is destined to become popular wherever boys are. Fiction, travel, biography and adventure, are given in judicious proportions. A specimen copy will be sent to any address for two three-cent stamps. (Wm. H. Rideing, 4 Province Court, Boston, Publisher; 50 cents a year.)

——*Merry's Museum* for February is handsomely illustrated, and filled with good stories, poems, etc., for boys and girls. Since this popular magazine was started, thirty years ago, by the renowned Peter Parley, a score or more of periodicals, intended for the young, have been born only to die, or to be absorbed by their rivals. Merry himself has swallowed a half dozen of them. The Museum is published by Horace B. Fuller, Boston. Terms, $1 50 a year. Specimen, 10 cents.

——Twenty volumes of Scribner's Illustrated Library of Wonders have already been issued, and have obtained a large sale. The next succeeding works in this series will be "Celebrated Escapes," "The Heavens," "The Wonders of Engraving," and "The Wonders of Sculpture."

FARM AND GARDEN NOTES.

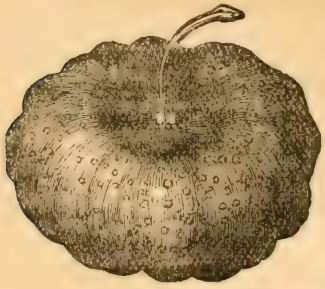
The Cultivation of Sorghum.

Some failures in the cultivation of sorghum and the manufacture of syrup, during the past season, have deterred many from planting, or preparing to plant, this season; but we trust this is not generally the case. The failures, where they occurred, were due to causes that are removable, and especially to that which would cause failure in any crop or any business—*neglect*. Let those who plant this year make up their minds to give the crop the necessary attention, instead of letting it take care of itself. Mr. Stuart, author of "Sorghum and its Products," says that the qualities of the sorghum plant depend, in a great degree, not only upon the purity, but also upon the *proper development* of the seed. Imperfectly ripened seed is unfit to plant, and if it germinate at all produces a weak and sickly shoot.

Premium Crops of Corn.

Some time ago the New York Farmer's Club discussed the corn question, and doubts were expressed in regard to the large yields, of one hundred bushels and over, occasionally reported in the papers—especially *the two hundred bushels per acre* said to have been grown in South Carolina. More recently, a writer in the *Germantown Telegrayh* calls for proof that two hundred, or even one hundred and twenty-five bushels were ever grown on an acre. These doubts can be satisfied in regard to Dr. J. W. Parker's crop, grown near Columbia, S. C., if they will take the trouble to investigate the matter, as the land was surveyed by the City Surveyor, and the corn measured by a large committee of trustworthy and responsible gentlemen, and found to be *two hundred bushels and twelve quarts.*

The Yokohama Squash.



This is described, in the catalogue of B. K. Bliss & Son, as "of the Turban class of squashes, and measuring from four to six inches through, and from six to twelve inches across, and weighing from six to twelve pounds. The surface is strongly ribbed, the skin warted in its early stages of growth, of a pale green color, becoming of a very deep green when more advanced, and when fully ripe is of a uniform dull orange color. The flesh is of a deep orange color, very finely flavored, sweet and dry, very fine-grained, and *without any fibre.* It is excellent stewed, and whan baked it much resembles a sweet potato in flesh and flavor, and is superior to any pumpkin for pies." The Yokohama was grown with success last season, in the vicinity of Charleston, by Maj. W. G. Vardell. We have not tried it.

Melon Sugar.

In Italy and Hungary there are, it is said, several large manufactories of *melon sugar*, and it is believed that the culture of melons for this purpose could be made profitable in this country. The proportion of saccharine material in the juice is about seven per cent., while in beets it is only one per cent. more, and the cost of expressing the juice is much greater than from the melons. The matter is worth looking into. We once made a very fine article of syrup from melon juice, but did not carry the experiment further.

Three Promising Grapes.

A writer in the *Horticulturist* places the Senasqua, one of Mr. Underhill's seedlings, (a hybrid between the Concord and the Black Prince,) at the head of all out-door grapes he has ever eaten. Next to this he places the Eumelan and the Croton. The latter, he says, is a feast both to the eye and the palate.

Good Farming Pays.

Mr. W. A. James, residing near Bishopville, S. C., gathered last year, from a twelve acre field, an aggregate of six hundred and twelve bushels of corn, or fifty-one bushels to the acre, besides growing on the same ground field peas, estimated at six bushels per acre. The net profit per acre, not including the peas, was $45 50.

Tender Lettuce and a Tough Story.

Harper's Magazine says, that Lettuce may be produced in winter, in from twenty-four to forty-eight hours, by taking a box filled with rich earth, in which one-third part of slacked lime has been mixed, and watering with lukewarm water. Sow the seed in the usual way, after they have been previously soaked in brandy for twenty-four hours.

Gardening for Brain-Workers.

Mr. Greely's Cabbage Garden may not have been a bad investment after all, even though that attractive vegetable was raised, as he tells us, at an expense of thirteen dollars a head. Digging in the dirt, seems to be almost a specific for an over-wrought brain.

—— A correspondent of the *Southern Farmer* describes his mode of using cotton-seed meal for horses as follows:

"I mix one peck of the meal with one bushel of shelled corn. I have a small box which holds four pounds of corn. Meal and corn, mixed as above, weighs four pounds two ounces; the box of meal weighs three pounds eleven ounces. I give to each horse three times a day one box of the mixture. I often use a little weak brine to dampen the corn just enough to make the meal adhere; this induces the horses to eat the meal up clean."

——A writer in an Exchange, the name of which we cannot now recall, says:

"I suppose in less than a dozen years we shall do our ploughing, cultivating, harrowing, etc., by steam, but in the meantime, farmers who keep six, eight, or ten horses, want implements that can be used with four horses abreast. I am tired of seeing a strong, active man walking over the clods after a light pair of horses, when he could just as easily drive four, and do double the work, with no more fatigue to himself. We complain a good deal of the high price of labor, but do very little towards making it more effective."

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

A LETTER FROM BRAZIL.

Editor of The Rural Carolinian:

I have to acknowledge receipt of a package of "THE RURAL CAROLINIAN," which I have distributed among those planters most likely to become subscribers, and doubt not you will in due time have a respectable list from this province.

Information regarding tropical agriculture, as well as machinery, implements, etc., are sought for in Europe, generally in England, and where they are least capable of understanding, advising, or meeting the wants of the planter. Your publication has, in view of its adaptation and thorough practical value, been most favorably received and commented upon; and not only this, but is destined to draw attention to American improvements, from which our countrymen will derive substantial benefits, whilst agricultural interests here will be proportionally advanced.

One party who has signified his intention of sending for your magazine, beginning with the first number, adds an enquiry, which is respectfully referred to you, viz:

"Information as to the mode of extracting cotton seed oil; what machinery is necessary, and where the machinery may be obtained."

W. H. EVANS.

Maranham, Brazil, December, 1870.

The manufacture of cotton seed oil is a comparatively new one, and those engaged in it uniformly keep many points in it secret.

With cheap and abundant cotton seed, and facility of sending products to market, and sufficient capital to purchase seed in the winter to last through the year, the business may be profitable. Almost any iron-works can supply the machinery, but it should be selected, inspected, and put up by a person of experience in the business. The capital of the companies in operation vary between $40,000 and $200,000.

Gen. E. P. Alexander, President of the Columbia (S. C.) Oil Company, could, perhaps, furnish the enquirer the desired information.

ADAIR'S SECTION BEE HIVE.

Editor of The Rural Carolinian:

In your last number, I notice an inquiry, from "Subscriber," about Bees and Bee Hives, in which he states that Langstroth's Hive is recommended as the "simplest and best." If I have been correctly informed, Langstroth's Hive is constructed with movable frames, to hold the comb, and these frames are very liable to warp and get out of order, and for that reason I would much prefer "*Adair's Section Hive*," which is not liable to this difficulty.

I have used this hive, and find it entirely satisfactory. As to its simplicity, I quote the patentee's words, having found them true in fact, viz.: "It can be made by any one who can use a saw, a hammer, and a square; as there are no tongues and grooves, nor rabbits, nor slots, nor notches, nor traps, nor triggers about it. Every piece is square, and has only to be sawed off and nailed together."

As to a swarm of bees being hived, without liability to being stung, I think it impossible.

D*****

Sumter, S. C., February 2d, 1871.

DRAINAGE.—GAS LIME.

Editor of The Rural Carolinian:

A planter on the Chattahoochee asks how he can drain spots, or ponds, on his land. I was looking over an old work a year ago, and in it found that in Holland they dig a well, in the centre of the pond, until they come to sand or gravel, and then fill it up with logs of wood, placed perpendicularly, and then cover it over with trash and straw, and the drain is made, and land kept dry. I tried it, and found it to work to my perfect satisfaction.

I would like you to tell me the value of gas house lime as a manure? We are all nearly "broken," and want something *cheap* but *good*.

A FARMER.

Gas lime is considered by those who have learned to use it judiciously as of great value as manure—nearly as valuable as common lime; but, when fresh it contains element very destructive to vegetation, and should, therefore, be spread upon the land in the fall; to be ploughed in during the winter or spring. In this way it proves useful in destroying weeds and insects, but before planting time will have lost its poisonous qualities.

CURE FOR SORE HEAD.

Editor of The Rural Carolinian:

I noticed in last November number of THE RURAL CAROLINIAN, an enquiry for the best

remedy or cure for "sore head" in poultry. A strong infusion of tobacco applied to the crusts, scabs, or sores daily, has invariably succeeded in curing the disease with us. In the most inveterate cases, where rendered blind from the disease, we confine in a dry, airy coop, and stuff with food, until they can take food of themselves. None will die if properly treated and regularly fed, as the disease is not a malignant one.

Sumter, S. C. J. M. P., M. D.

DOGS—A CURE WANTED.

Editor of The Rural Carolinian:

Will not one of THE RURAL readers, furnish his fellow ruralists with a good recipe for curing the "distemper in young hounds," or, better still, for preventing it. The recipe for "mange," in the February number, reaching me just in time, has already mastered to a great extent, that loathsome disease, and the pups, since its use, are otherwise greatly improved. A CONSTANT RURAL READER.

Wadmalaw, Feb. 4th, 1871.

INQUIRIES AND ANSWERS.

Our correspondent, Mr. P. R. Flanks, Beaufort, S. C., feels somewhat hurt by the remarks of Mr. Graves concerning his article on the Cactus. *We* were quite as severely *hit* by Mr. Graves in the same article, but not hurt at all. The difference is, we are accustomed to being hit and don't mind it. Mr. Flanks says:

"He moved a bare plant," Mr. Graves says. How does he know? I assert that I did not. "In doing so the roots were shortened." They were not only not shortened, but they were not exposed even, neither was the earth disturbed, for the plant was in a box, in which it had been reared. "This done, the discarded lobes commenced decaying"—*they did not.* "Fermentation," and other rubbish of his own invention, ("clearly defined facts," I suppose,) to his mind establishes his position, and he retires behind his more fortunate hedge, pluming himself on his victory.

In regard to the worm being the cotton caterpillar, Mr. Flanks had "consulted better authority than himself before making the statement." The fight here must be between his "authority" and the science of entomology.

——"Subscriber," Sumter, S. C. *Peas* are packed for market in barrels, with apertures for ventilation, or in crates. They should be spread in the shade for a few hours to dry before boxing. *Snap beans* usually go in crates, and should, also, be as dry as possible. New York is the best market for the earliest crop. We are afraid to recommend any particular firms, having no personal knowledge of any of them. Dr. A. B. Rose, of this city, could give you the necessary information on this point. We can send you the seeds you ask for, if you will send your name, address, and stamps to pre-pay postage.

——M. C. M. H. The paragraph in regard to the new Turpentine Process, was clipped from some exchange paper, and the address, as well as the name of the paper has been lost. Can any one tell us more about it?

——"California." The plant, leaves of which you send, is new to us. We should be glad to have you send the seeds, in their season.

—— Will some experienced housekeeper give a young housekeeper a good receipt for making raised bread. I have tried the Potatoe Buns, and find them excellent. MRS. A. M.

——In answer to inquiry about Bee Hives, I think I can safely say, that the "American Hive" is far simpler and better than "Langstroth's." Col. P. J. Quattlebaum, Ridge Spring, Edgefield, S. C., is the agent for them, and has been for the last three years, or more, successfully engaged in Bee culture.

ANOTHER SUBSCRIBER.

——We know no one who has the Cactus Hedge plants for sale, but possibly our correspondent Mr. P. T. Graves, Manack, Ala. might supply them.

——There are two errors in our recipe for cooking oysters. It should read *one pint* (not one half-pint) of milk; and the sauce is good for rice *and* breads, not rice-breads. R. C.

——Will "R. C." please send the translation (and condensation, if necessary,) of "Cultivation of the Cauliflower in Paris," of which he speaks in private note.

——J. P., Ala. We like Murfee's *subsoil plough* as well as any we have tried. You can get reliable *Dickson Cotton Seed* from David Dickson, of *Oxford, Ga.* Iron mills are not generally so good for making bread-meal. In regard to the best *Ditcher*, will some one who has the necessary experience answer?

——P. H. O. Your plan for applying *Cotton Seed* is good. Crushing will pay if you have the facilities for it.

——W. T. T., Alabama, inquires if there is any Ditching Machine in successful operation. Can any correspondent give him the desired information? There is a machine patented by J. C. Osgood, Troy, N. Y., (who may be addressed on the subject,) that looks well on paper, but we have no personal knowledge of it. It is said to dig a mile of ditch in a little over three days, two and a half feet deep and three feet wide at the top.

——Many inquiries and answers are postponed, for lack of room, and will appear in our next number.

RECIPES.

LEMON PIES.—Take two lemons, grate away the yellow rind and chop the rest very fine. Into two teacupsful of hot water, stir well two tablespoonsful of corn-starch, and boil; add two teacupsful of white sugar; when cool, the beaten yolks of four eggs; then add the chopped lemons with their juice, stirring well together. Line two plates, pour in the material and bake until the crust is done. Beat the whites of the four eggs to a froth, adding five tablespoonsful of white sugar, pour on the pies while hot and return to the oven and bake to a delicate brown. We have never eaten any pie superior to this preparation.

SILVER CAKE.—Whites of eight eggs, two-thirds of a cup of butter, two cups of sugar, two and one-third cups of flour, half a cup of sweet milk, two teaspoonsful of yeast powder. This makes fine jelly cake, baked on tins with jelly between. A SUMTER SUBSCRIBER.

POOR MAN'S PRESERVES.—To two quarts of dried apples, put two pounds of brown sugar, one stick of cinnamon pounded, two or three spice, six cupsful of rain water; stew slowly in a china-lined saucepan until perfectly soft. When cold, pack tight in a jar, cover closely to exclude air. With milk, or as sauce to bread, it is a cheap, wholesome dish and quite palatable. L. L.

ANOTHER.—Peel, pare and core, four dozen apples; stick two alspice in each; set them in a shallow pan, pour two cupsful of water over them; cover them well with brown sugar, (say about a pound and a half); put them in a stove or oven and let them bake slowly for four hours. When cold, pack them in a jar, with a sprinkling of sugar between each row. When wanted for the table, heat them and serve with milk, or wine sauce. They make nice dumpling, or tarts, and will last through the winter. L. L.

LITERARY AND HOME DEPARTMENT.

THE MURILLO DE LA MERCED.

CHAPTER VI.

I had elicited from his lordship the two or three facts I required—the address of the late Baron Mordecai, that his relict survived, and that she still occupied their residence at Highgate. I had made up my mind to a certainty that in the Baroness I should discover my old patroness, the black-veiled duenna. Immediately upon my arrival in town I called upon my old friend, confidant, and counsellor, Morris Blake. Morris always asserted that unless he had the assistance of "baccy and sthrong waters" he was quite unqualified for the two latter offices. By observing what quantity of smoke he puffed out and how much whiskey he took in, it was not difficult to estimate the degree of interest he felt in a story. Judging by these tests, I was highly gratified at the effects my tale produced—they were simply immense. "Having done, he gave me for my pains a world of thanks," and, to use his own phrase, "concurred intirely" in all my conclusions. And then, promising me his personal assistance and countenance, we arranged our plan of operations.

The following morning we went together to Highgate. We were fortunate; there was no difficulty in finding the house—a handsome mansion in its own grounds; and the Baroness was at home. Lest she should remember my name, we had agreed that Blake was to send in his card. There was no hesitation in admitting us, and we were shown at once into a large apartment, which—although altered by the tapestry I formerly described being transferred to a different side, leaving the windows it before concealed visible—I immediately recognized as the one I had used for a studio. It was occupied by a

lady, tall and enormously fat, with grey hair, but dark eyebrows, dressed in deep mourning. She was seated at a table with what appeared to be a ledger and several account-books open before her. As we entered she turned upon us a glance of the keenest black eyes I had ever seen.

"Goot mornin' shen'l'mens," she said; by Jove! with the preliminary wheeze and husky tones recognizable, and to be sworn to, as if heard only yesterday. "Vhat ist your bleasure mit me? Veesh ist Mishter Blake?"

"Yours to command, madam," said Morris, bowing low. "But you'll not remember me. Sure it's my friend here that's wantin' to renew the pleasure of an ould acquaintance with you, Baroness."

"An olt acvaintance mit me!" she exclaimed, turning on me a searching look. "Vhat ist your name?"

"Permit me the honor, madam," I replied, placing my card before her. "Surely you have not forgotten me?" As she read my card, and I spoke, her expression visibly changed to one curiously impenetrable and defiant.

"I nefare knowed you—I hafe nefare seen you in alle mine life. Vhat ist you mean?" she hastily answered, rising, and at the same time pulling a bell.

"Mean, madam? Oh, nothing but to recall myself to your memory. I know it is many years ago, but you can hardly have forgotten that I painted in this room a picture, in which the deaf-and-dumb model, Serafina Pagano, commonly called 'La Principessa,' whom you brought from Florence, and who is now living at Naples, sat for one of the figures, and which picture the late Baron Mordecai sold as a Murillo to Viscount Bricbrakmont for thirteen thousand guineas, as his lordship told me only the day before yesterday."

As I went on speaking, she turned very pale, and pressed her hand painfully on her bosom; and when I finished, apparently taken quite off her guard, in a hoarse, broken whisper, asked the question that, in reality, acknowledged everything.

"Hafe you tell eem as you vas baint it?"

"No: I have told him nothing yet." My reply seemed to relieve her; but she sank into her seat again, as if unable to support herself.

At the same time, from the door through which I used to go to my bedroom, there entered a man in whom, despite a bald head and other changes which age had made in his appearance, I recognized the individual I had seen under the carriage-lamp, with features, the prototypes of those belonging to the dead head. He seemed sorely startled at beholding the palpable agitation of the Baroness, and demanded in a bullying tone:

"Was giebt's dem? was giebt's dem?"

"Schweig, schweig, Nathan!" the lady answered, holding up her hand and beckoning him. "Zu mir, gleich, gleich!"

Long and earnestly they conversed in whispered German. My companion and I curiously noticed how Nathan seemed suddenly, from the first words she spoke to him, to be infected by his mistress's fear and pallor. Gradually, as they continued to converse, we observed stealing over the faces of both the same hard defiant expression assumed at first by the lady. At last the man turned to us, and said quite in a threatening manner,—

"De Baroness Mordecai say they know noting apout de von or de t'oder oaf you; an' noting about no bicture at all; no. So you git avay mit you, both at vonce."

I was about to reply in a very indignant manner; but Morris, turning upon me a look with the irrepressible devil of an Irishman's fun in it, took upon himself to be spokesman. It was in his very suavest manner that he said,—

"Oh bedad! I was just thinking so sirr. An' it's sorry I am for any bother we've given the Baroness; an' I hope she'll forgive us, seeing it was only beca'se we consated we'd settle by a little cosy chat among ourselves, ye see, the throuble she's likely to git out o' lawshutes, an' all that, with my Lord Viscount Brickramont" (good heavens! how he mouthed the title); "an' also havin' a lot o' quare stories raked consarnin' how the Baron—rest his sowle!—used to manufacture old pictures out o' new ones. An' there's that quarer story yet about a kilt man's head—for kilt, somehow, we all know he was—over the likes o' which the rascally police, magistrates, an' editors o' papers 'll just make a shine—oh! such a shine! won't they? But there; if it's only disagreeable we're making ourselves—many apologies, madam and sirr—good mornin';—we'll humbly take our leaves,—good mornin'."

Immense was the effect of this "firework" which Morris threw at the pair: every joint of the cracker as it exploded increased their obvious dismay, especially that of the Baroness.

"Shtop! shtop! eef you blease. You don't go till I vas shpeak mit you," she querulously entreated, recalling us. She had become more deadly pale, and was pressing her hand with more painful gesture upon her heart, "Nathan, halt des maul," she said, speaking with great sharpness to the man; then she addressed me, moving at the same time to the recess of the farthest window, "You shoost blease to come here. Let me talk a leetle mit vou."

I went to her; but it struck me as rather a hardy thing to do, for, as she faced me, I

think I never saw a human face with an aspect of such fierce malevolence.

"Now den," she asked, in a short sharp whisper. "how mp'sh you vant."

"How much I want!" I repeated, taken completely aback.

"Ach, ye-es! say, how mo'sh money?"

"Money!" I exclaimed, laughing, as her view of what we came for dawned upon me. "My good madam, I don't want any money."

"Himmel's donner! was ist es den as you wants?"

"Baroness," I said, speaking aloud, and moving to the centre of the room, "my friend is of counsel with me in this matter. I can have no discussion with you to which he is not a party. What I want is satisfaction to some very uneasy feelings I have. I ask you, and you must—mind me, you *must*,—explain to me the mystery of that man's head which I painted here, how he came by his death?"

"Gott in himmel!" she interrupted me by exclaiming indignantly. "Vhat!—you tinks we 'as mordert eem?"

"I hope not," I replied, firmly.

"Vhy, he was dis man's bruder—Nathan's zwillings-bruder—vhat you calls eem's tween."

"Good Lord!—his twin-brother!" I could not help exclaiming, as the wonderful similarity of features recurred to my recollection. "And how was he kil—that is, how did he die!"

"Nathan, you say eem how your boor bruder was kilt."

The Baroness had to repeat her commands twice before Nathan, who had watched with a cowed, but malignant aspect, reluctant and sulky, complied.

"He hafe bin in de garten, an' a-cuttin' de grass mit a scyt', fruh in de mornin'. An' vee tinks ha puts de scyt' agin de vall; an' den he gits oop a latter dere, an' he toomple, oder de latter toomple, an' ach mine himmel! de messer cuts his leck so schwer—onter de knee—shoost here." The poor man indicated the place with his hand on his own limb.

"Popliteal artery, by Jabes!" interpolated Blake, Nathan paused, regarding Morris doubtingly; but apparently satisfied by the sympathy his face expressed, he continued,—

"Mine bruder! ach, mine bruder! no potty hear eem, he cannot git oop; an' he plead, an' he plead; an' vhen vee finds eem, he ist deat'; ja, mine boor bruder ist ganz deat'; ja—ja—deat'!" He became more and more affected as he went on relating the sad event, till, at the conclusion, overcome by his feelings, he rushed from the room.

It was only after a considerable pause that the subject was resumed by Blake inquiring: "And pray, madam, was there any public notice taken of the poor man's death?"

"No-dice!—Gott in himmel!—ya'es. Dere come de goroner an' eem's jury, an' eet vas in all de bapers."

"Oh, thin, thank you Baroness. Excuse my curiosity; but how came his head to be painted without iver a body to it?"

"Oh, das vas pecause he hafe no blut in eem; an' he make so pe-utiful a Shone der Paptist, mit de Princess. Vee hafe pring her mit us to be mottel for anoder bictur' oaf de jung-frau Cenci; she hafe such eyes for dat she hear not! aber, vhen dis habben, she doos efer so mo'sh betterer for a Salome mit eem, ya'es. So vee cut eem away his head."

Morris and I glanced at each other, and then at the singular creature before us who, in so indifferent a manner, avowed the cutting off of a corpse's head, without the shadow of a doubt in either of our minds that the act had been done by the fat, jewelled, and nervous hands lying there so composedly on her lap. Her manner, during the latter part of our conversation, had completely changed to one which I can only describe as "gossipy." Suddenly, after a pause, she addressed me,—

"Vere does you leef, now?"

I told her

"Doos der Viscount coom dere to you?"

"No; I saw him at his own place in —— shire."

She looked furtively, yet keenly, or rather knowingly, at me.

"Vhen you vas coom in, what vas you say about the bicture you vas baint, as he hafe it?"

"Yes, madam. He told me the whole story, and how, as well as for what, he bought it of Baron Mordecai."

"Ah, I knows noting apout dem tings. Vhat he tink eet vas vhen he buy eet?"

"He bought it for a Murillo, madam, at a cost of thirteen thousand guineas," I replied severely, but my answer only seemed to amuse her, for she actually laughed.

"Ha, ha, ah! Potztausand! vas for a fool! He ist von as tink he know eferyting apout bictures. He see a bicture, an' he say, Dis ist Polemberg; he see anoder, an' he say, Dis ist Cuyp; an' he say, Dis Ostado; oder, Guido Reni; oder, Murillo; and eef you gontradict eem, you make eem in a great bassion. Hafe you gontradict eem?"

"No, I certainly did not. It would be cruel, as he is so entirely satisfied."

"Oh, you ist vise man, gewiss! He vill nefare forgif you—he hate you allevays—if you gontradict him. Vee hafe pay you alle for your bicture vhat vee hafe bromise?"

"More Baroness, more. I am bound to acknowledge you acted most liberally."

"An vhen you coom'd here, I doos alle I say I doos for you?"

"Certainly, in every particular—certainly."

"Ah, eet vas vhat der Baron say; you vas a perfit shen'l'man; dat eef you gif your vort oaf honour you nefare, nefare forgits eem—ya'es.

I hafe lofe you den—a goot deal lofe you; an' I lofe you now fery mo'sh."

I was greatly startled by the tender confession, uttered, as it was in the wheeziest whine I had yet heard her use. But I was in a much greater degree surprised by the adroit manner in which she managed to shift me from being the "master of the situation" into one in which I had to confess myself the obliged party, the recipient of favours, and the subordinate to pledges which, though given so long ago, were reproduced now in their native freshness, as altogether indestructible by time or circumstance. As for Morris Blake, I believe he thoroughly enjoyed the position affairs had assumed.

"An he desarves it, Baroness," he struck in; "as well as being exactly the one to appreciate the soft kindness, now his conscience isn't haunted any longer by raw heads an' bloody bones. As for your Murillos an' viscounts, as they seem mighty well satisfied with each other, I'll go bail he won't interfere by word or deed. Why should he? when as you tould him long ago, 'tis no business of his at all."

This assurance seemed highly satisfactory to the lady, especially when it was corroborated by myself. As we had now neither reason nor excuse for prolonging our visit, we took leave of the Baroness, and that with a cordiality which neither of us would have thought probable when we entered her presence an hour before.

"Supayrb cra'tur, that!" Morris remarked, as we got into our hansom. "I'd just like to bet any amount that 'tis she wove the net that caught the Vi——Hollo! hould me, Charley! hould me tight, or I'll be over head an' ears in poethry!"

I could not help laughing, as I assented strongly to his opinion.

"Yes; an' the sentiments the story convarts me to, Charley, is that the pictur'-thrade, bedad! licks horse chauntin' by chalks."

While returning to town, an idea occurred to us which we carried out at once by driving to the British Museum, where, by the courtesy of Mr. B——of the reading-room, we were enabled to verify, from the 'Times' of the date, the account of the accidental death of Nathan's brother.

The Baroness lived till a little more than a year ago. I have a great respect for her memory. I really think she was a good sort of woman in her way. She presented to my youngest child, a girl, a very handsome coral with gold bells, besides a necklace and sleeve-loops of the same with massive gold clasps; also, at various times, several articles of jewellery, and some splendid old point-lace to my wife. Through her generosity, too, I am the possessor of that embossed and chased silver dish which, whilom, did duty for King Herod's salver in my picture of Salome and John the Baptist's head. As for the picture, when Lord Brickbrakmont died, several years ago, it was disposed of by his heir, a distant relative, without a scintillation of æsthetic taste to the great Russian *dilettante* Prince Dglmlgziskoff in private contract for some incredible amount of money previous to the rest of the collection being dispersed by Christie & Manson. It is, I suppose, in Russia; but wherever it may be, as I see no occasion for further secrecy, I here assert my claim to be the painter "OF THE GREAT MURILLO DE LA MERCED."

H. CARL S.

OLD BOOKS.

To me there is always an inexpressible charm in an old book! I am fond of antique type and spelling; dingy, yellow paper, and tattered, worm-eaten covers suit my taste better than gaudy modern binding.

Heavy, leather-bound folios, dark and stained with years, attract me strangely: when I find such, I never pass them by; but revel for a time in their contents, and the thoughts that they suggest. Somehow, I have gotten houses and books mixed up in my mind, and a new book always brings before me a new house—pleasing to the eye, but barren to the fancy—a mere mass of brick or stone, covered with paint and plaster, but suggesting nothing. But an old volume recalls the house where it was first read—perchance some mansion with heavy oak pannelling; long, gloomy passages, and queer old garrets full of dust and lumber; a house that sets us dreaming of the gallant gentlemen who once trod its floors—of the sweet maidens, whose songs awoke the echoes of its walls—of the marriages and christenings—the deaths and the funerals, that now caused it to ring with mirth, now filled it with weeping. In fancy we can draw near the Christmas hearth, where the great yule log blazes, and listen to the rough jests, watching the while the dancers tripping it under the mistletoe. So, too, with an old book, every quaint expression, everything

strange in its type or binding, recalls a vanished age; or, perhaps, it was owned and prized by one of the loved and lost, who rises up before us as we read, till our eyes grow dim from tears, and we fall in a revery,

"Remembering, as in dreams, the days
departed,
The bygone happy days."

And even if it belonged to a stranger, who has marked his favorite passages, and added here and there a note, it assumes in my eyes a new interest; it gives me a glimpse of the tastes of my predecessor; it partially lifts the veil from his inner life. I note the parts that he has marked, I read his notes: and if his tastes accord with mine, I feel as though I had gained a friend, who enjoys with me beauties, and aids me in my efforts to gain an insight into the obscure passages.

I have treasured up my school books; and if, by chance, I pick up one of them, how much does it recall, and what an infinite longing comes over me for those sweet childish days, when, with my mother's kiss still fresh upon my lips, I hurried off to school.

The very covers are eloquent. To me they have a language, and tell of many a merry day and mad-cap frolic; every scar and dent (and they are not a few) unfolds some tale of happy school-boy life, of which the sorrows are mellowed and softened by the hand of time—the pleasures enhanced by the magic of distance. There rises before me a country school-house; old faces throng around me; I hear the ring of voices that have not greeted me for years; I recall my morning walk to school, the games we used to play, our rambles through the woods in the long summer afternoons, beside the gliding river where we used to swim. Ah me! if I could only plunge once more beneath its waves, and rise, as in those old days, free from the dust of life, the heavy weight of years! It may not be! all is wrapt in shadowy dimness, it seems a glimpse of dream-land. I know that it is a phantom, a ghost of vanished years!

But I have wandered far from my book, and must return; though I warn you, gentle reader, that you must not bind me down to any method, but let me ramble on as best pleases me.

Should I open the book, I find it very common-place; there is nothing in the text to interest, no fact with which I am not familiar; but on the very first page I read a name, "Katie," and a merry light comes into my eyes, as I recall an old sweetheart, and laughingly I read the doggerel scrawled in true school-boy fashion below.

I slowly turn leaf after leaf, fearing to lose some memento, and reluctant to leave my ideal kingdom; but, as in all things earthly, the end is soon reached, and I throw the book aside, refreshed by the pure, childish thoughts, and happy, even in dreams, to be one of a company of whom I well may say,

"All our thoughts and words had scope,
We had health and we had hope."

Here is a text-book used when I was one of the jolly Fresh at —— College. I open it with a sense of shame, for though battered and bruised, you will find no well worn pages, no evidence of earnest labor, and the wasted years reproach me. Yet those were pleasant days, and I am almost persuaded that the Freshman reasoned better than his elders, when, after long and deep meditation, he concluded that study was high treason to his enjoyment, and proved it by the well known lines:

"Quid sit futurum cras, fuge quaerere; et
Quem fors dierum cunque dabit, lucro
Appone; nec dulces amores
Sperne, puer, neque tu choreas;
Donec virenti canities abest
Morasa."

Nevertheless let us open it, and glance at the odd collection of names and dates that adorn the first few pages.

First, stands the roll of my class, as in 18— we used to assemble in Chapel, and they come trooping before me as of old, I forget the grave men of to-day, and only think of the gay throng who used to meet me on the *Campus*.

Alas! our *Alma Mater* knows us no more, and others, as young and fresh as we were, now fill our places while we are scattered far and wide, some still mingling in the rush and roar of life, some having entered

"Into the land of the great departed,
Into the silent land."

Oh, my brothers, that we might lie once more beneath the elms of the *Campus!* and, all free from care, dream as we used to do. Now comes the text, and every scribbled note recalls some professor and his lecture room. And then the last few leaves; what a jumble! Where is the beginning, where the end? Here is a drinking song, an epigram, old scraps of verse, and half erased "a woful ballad made to my mistress' eyebrows."

What a flood of memories these lines cause, bringing back a lost love, and conjuring up a vision of blue eyes, and sunny, ripling hair, and causing us to cry with the poet:

"Time turns all our hopes to derision,
Our sweethearts to other men's wives,
And marriage, and death, and division,
Makes barren our lives."

But our book is finished, so good-bye to college and college-days, to grave professors and heedless undergraduates, to practical jokes and the pleasures of foot-ball; yes, to one and all, with a heavy heart, farewell!

Now, let us wander back along the centuries; let us enter some great library, and seek to read a lesson from the huge, antique volumes that sleep peacefully upon its shelves, seldom disturbed by the hands of man. Here is the Dooms-day Book, and well does its contents support the ominous threat of its name; and how the odd mixture of Saxon, old French, and Latin bewilders us.

The lines that stripped the Saxon noble of his broad lands, to enrich some needy Norman adventurer, are as brief and stern as the classic *væ victis*. Insensibly we are borne back to the age of chivalry; we can almost see the field of Hastings, and hear the war-cries mingling with the clash of arms; we sigh for Harold and his gallant army; our cheeks burn, and we set our teeth hard when we remember how the Norman lance overbore the stout Saxon sword.

If you do not sympathize with me, reader, let me beg that you will take Scott's Ivanhoe, and, under the oaks, near to the Druid stones, help "Gurth" collect his swine, and listen to "Wamba," as he tells the ills of his countrymen.

But we must hasten on, for round us are spread the garnered treasures to three thousand years of thought, beginning with the *Rig Veda*—that first of literary landmarks—and coming down to our own times; and we have only to go back a century or two, to arrive at that happy collection of books that may be read at random, for they are pure gold, one and all, time and rust having destroyed all baser metal.

All times, all states, lie open before us; we may enter the councils of kings, the conclaves of bishops, the dungeons of patriots, the dainty boudoir of the lady, or even hear the whispered vows of lovers.

We can see Troy burn, be with Paris and judge the goddesses, or sip nectar with the Olympians: we may wander through the world,

"From Eden over Pontus, and the pool
Mæotis, up beyond the river Ob,
Downward as far Antarctis, and in length
West from Orontes, to the ocean bar'd
At Darien, thence to the land where flows
Ganges and Indus."

We may cause the ages from the Creation to spread themselves before us in a series of dissolving views, mingle with the gay Athenian citizens, or hear the tramp of the Roman legions, be with Ulysses

"On shore
Or when thro' scudding drifts the rainy Hyades
Vexed the dim sea;
Or drink delight of battle with his peers
Far on the ringing plains of windy Troy."

There is something substantial in an old leather bound volume that fills us with respect, and causes us to heed more carefully its contents.

We always feel as though about to launch into a sea when we open such a book, and are prepared for wonders on every page; it does not in the least disconcert us to have all our modern ideas refuted; we don't object to their geography or to the wonders of lands far down in the West; and refreshing it is to get rid of our bewildering modern ideas of hard facts and strict logic. It injures my vanity to think that I am only an atom in the universe. I would have our generous mother Earth the greatest of created things, and am content to think with the ancients, that she is, and that the sun is only an appendage, a sort of perpetual lamp made solely to give her light.

We moderns are too material, we have robbed nature of half her charms.

"The intelligable forms of ancient poets,
The fair humanities of old religion,
The power, the beauty, and the majesty,
That had their haunts in dale or piny mountain,
Or forest by slow stream, or pebbly spring,
Or chasms, and wat'ry depths; all these have vanished,
They live no longer in the faith of reason."

But I long for the old Greek-life, I am willing to accept their myths and to worship Beauty as the visible form of God. So with the old Spanish King, I say, "give me old wine to drink, old wood to burn, old friends to trust, old *books* to read.

G. S. H.

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Some time since the proprietors of the Charleston *Weekly News* declined clubbing any further with THE RURAL CAROLINIAN. We are thus unable to renew old or take new subscribers under the previously existing arrangement. We are still clubbing with many first-class leading Dailies and Weeklies through the South.

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WALKER, EVANS & COGSWELL,
Charleston, S. C.

FARM AND GARDEN CALENDAR FOR MARCH.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance North or South of this place must make the necessary allowances for difference in the seasons.

AGRICULTURAL OPERATIONS.

Corn planting time is now upon us, and we hope the planting will be well and largely done, so as to secure enough corn for home use throughout the South. We have given, in various back numbers, our views, and those of others, on the best mode of planting. Good judgment, however, must be used in applying any general rules. Modes of planting and cultivation must be varied to suit different circumstances. It is well to plant as early as the state of the weather and of the soil will permit, but not to take large risks in the way of frost.

—— Prepare for the cotton crop with all dispatch, but do not allow it to prevent ample attention to provision crops. But we trust it is hardly necessary to warn our readers against planting too much cotton this year.

—— Rice should be planted as largely as the impoverished condition of our people and the demoralization of labor will permit, but we fear that will be too little.

—— Sorghum should not be neglected. Be sure and have enough of it for your own supply of syrup, if no more. Doura corn, Guinea corn, millet, etc., should also have their place on every plantation.

—— Oats may yet be sown; and it is not necessary to repeat our advice, as reiterated in previous numbers, as we presume all who can be moved by persuasion or argument have already got in, or are prepared to get in, a large acreage.

——Sweet Potatoes should be bedded early in the month, if not already done, to furnish a supply of "draws" for planting about the first of April.

GARDEN WORK.

Look over our directions for last month, and where the work there set down has not been done, as will be the case in a more Northern latitude, attend to it now. If any crops have failed replant them. Hoe and keep free from weeds all growing crops.

——Tomatoes, Peppers, Guinea Squash, and other tender plants may, if the weather is favorable, be transferred from your hot-beds and cold frames to the open ground, in this latitude, from the middle to the last of this month; but if the cold, raw winds continue, wait till the first of April. Seeds of all these may be sown in open ground, from the middle to the last of this month.

——Have your ground ready for Snap Beans, but do not plant till settled warm weather can be relied on. See an article on "The American Garden Bean," in our number for March, 1870.

——Sow Celery about the middle of this month in a cool, shady spot, but not under trees. The west side of a tight fence is a good place.

——Cucumbers, Squashes, Melons and Okra will be in order for planting toward the last of the month. Try the Persian, Cassaba and White Japan Melons, if you can get seeds.

——Sugar Corn for the first crop should be planted early in the month, but the main planting may be deferred. Common Corn planted at the same time will come in later, and bear the heat and drouth better.

——Plant Mangoes as soon as possible after settled warm weather comes on, and if frost should threaten, carefully protect the tender shoots. See article in December number on the "Running Mango."

——Where not already planted, or where the first planting has failed, put in Carrots, Beets, Parsnips, Swiss Chard. Thin out those planted last month.

——Cabbages of the early quick growing kinds may still be set out.

——This should be a busy month in the Flower Garden. Seeds of most annual flowers should be sown this month. The main requisites for success are to have the soil in a friable condition, so as not to bake, and to sow the seeds the right depth. Very small seeds should be sown on the top, and merely pressed in; larger ones deeper, in proportion to their size. See article in this number and February number on flower gardening, and for a list of desirable varieties the number for April, 1870.

——Evergreen Shrubs and Climbers may still be planted, watering them moderately at the time, and afterwards as they may require.

——Get Shrubs from the woodlands, such as the Azaleas, Scarlet Honeysuckle, Fringe tree, (Chionanthus,) and the Laurels, taking them up with great care and shading them after planting.

A Group of Merino Sheep.

THE

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Agriculture and South Carolina.

The mind pauses in its busy whirl to linger with inexpressible delight on the smiling beauty of the gardens of Europe. In the great plain of Northern Italy, sixteen hundred thousand acres of land display the highest state of cultivation to which modern ingenuity has advanced. This vast area presents one continual succession of green pastures, golden rice fields, loaded vineyards, neat cottages and magnificent villas; and the surface exhibits a complete net work of canals and their tributaries, each losing itself upon the bosom of the placid Po, whose silvery waters swarm with crafts of every description, hurrying to and fro with precious freights; flocks and herds, shepherds and husbandmen, cover the country in every direction. The snow-caped Alps, to the north, rear their lofty crests in silent majesty; and the mellow sunshine flashing from their dazzling summits, dances in gorgeous splendor upon the sea of waving green, and the many colored objects below. The senses are almost lost; the whole scene seems like a lovely dream, or magnificent panorama of Elysium, and one can scarcely believe that it is a charming reality. But a glorious reality it indeed is, where living men, with living hearts, work with unflinching energy, and beautify and elevate life. Rice, wheat, rye, Indian corn, hemp, flax, vegetables of every kind, and the vine, are here cultivated with great success. The land is made to produce a constant succession of these or grass, and to graze vast numbers of cattle; and the waters of the Po pour a continued stream of grain and other produce into the markets of the adjoining countries. We pass over to England, where on every side we see

"The lowing herd wind slowly o'er the lea,"

and the picturesque dairy farms, in peace and plenty, smiling with satisfaction on the inquisitive stranger. We are astonished to find that these farms yield from four to six hundred pounds of butter and five hundred pounds of cheese yearly to each cow; and, that they supply the large cities, eighty

and one hundred miles distant, with fresh milk and butter every morning and evening. In addition to this, these dairy farms produce an immense quantity of grain and vegetables. On the ordinary farms, by far the majority of rents are paid from the proceeds of the dairy. In Scotland we are struck with the economy of labor everywhere exhibited, in the number of steam engines, and labor-saving machines which are freely distributed over the country; and, still more so, with the amazing sight of twenty thousand sheep grazing on a single farm.

We next turn to Switzerland, and after rummaging among its mountains, we find, at Hofwyl, the site of the first agricultural school that the world ever saw, which, for thirty years, annually sent out one hundred trained agriculturists from its walls; and at every step, both on the Continent and in England, we meet with these institutions, where, by a healthful variation of mental and bodily exercise, a large number of boys are moulded into good and useful citizens. But it is in Ireland that the agricultural school system is most perfect; in this small island there are one hundred and sixty-six farm schools, with attachments of land varying from two acres to one hundred and eighty, forming a gradual ascent to the Central Model Farm, or highest school at Glasnevin, into which only the most talented pupils can enter.

It is with mingled emotions of mortification and regret, that we turn from these beautiful scenes to the comparatively desolate fields of South Carolina, for though we occasionally find a pleasing exception, yet it must be acknowledged that by far the greater portion of her soil presents a very low state of cultivation;* and this is particularly true with regard to the sea-coast, where the eye is pained by the constant recurrence of large fields overgrown with pine and brier thickets, and of fine settlements going rapidly to decay. It is easy to trace the cause of this unfortunate state of things to the cotton plant. In any kind of business it is dangerous to risk too much on a single speculation; since the war, the planters, generally speaking, have invested their entire capital in the cultivation of cotton, and, in many instances, not only all of their own, but a great deal of their friends' capital besides. Thus, having nothing else to depend upon, when the cotton crop fails the blow is crushing. At present the effects of this course are more noticeable on the sea-coast than elsewhere, from the simple reason, that the failure of the successive cotton crops in this section has been almost universal.

But though more fortunate, so far, the up-country has no reason for feeling safe; on the other hand, she has serious cause for feeling alarm, as the marked decline in the price of cotton during the present season, and the evident tendency to further decline, will not allow the delusion to last much longer.

To prove that cotton has a tendency to further decline in price, I am compelled to make a slight digression: the quantity of clean cotton imported

* My remarks are not meant to be applicable to rice culture, as that, as far as I am aware, is carried to the highest perfection in this State. The water culture of rice was invented in 1783, by Gideon Dupont, an experienced planter, of St. James', Goose Creek, Charleston County.

into Great Britain in the year 1860, was 1,390,938,752 lbs., of this amount 1,115,890,608 lbs. went thither from the United States, 204,141,168 lbs. from India, 44,036,608 lbs. from Egypt, and other points on the Mediterranean Sea, 17,286,864 lbs. from Brazil, and 9,583,504 lbs. from other parts; if the reader will take the trouble to compare the amount from the United States with the total amount from other places, he will find that the importations to Great Britain were in that year nearly five to one from the United States, over and above those from all other parts of the world. In 1869 the importations were as follows:

India	481,386,344
United States	457,358,944
Egypt and the Mediterranean	159,887,616
Brazil	79,641,968
Other Parts	42,952,184
Total	1,221,227,056

It will be seen by this statement, that while the total importations to Great Britain in 1869 were 169,711,696 lbs. less than in 1860, the importations from India had considerably more than doubled during that period; from Egypt, more than trebled; from Brazil, more than quadrupled; and, that from other parts, the increase was nearly quintuple. The enormous decrease of the importations from the United States, is owing to the vast increase of the home consumption: but this fact does not effect the most important point, which is that *cotton is being very extensively and successfully cultivated elsewhere than in the United States.*

To realize the force of the above, it must be remembered that Great Britain consumes a great deal more cotton than all other parts of Europe combined; the total consumption in Europe for the year ending September 30th, 1869, was 4,503,000 bales, of which 2,587,000 bales were consumed by Great Britain; the number of bales on hand, on the same date, was as follows:

Great Britain.....489,000 bales.
All other parts of Europe..... 94,000 bales.

It may not be generally known that cotton is now extensively cultivated in *Greece, Turkey in Europe, the Island of Cyprus, Asia Minor,* and in nearly every portion of Africa and Southern Asia, to which modern civilization has extended. In view of these facts, then, it may be safely asserted that the price of cotton *will continue to decline,* and, indeed, it is very probable that it will go to a much lower figure than it ever reached previous to the late war.

I must not be understood to condemn the cultivation of the cotton plant, far from this is my intention, but I do most emphatically condemn the cultivation of it to the exclusion of other products. That country is least effected by fluctuations of the markets whose inhabitants raise the greatest variety of crops.

South Carolina possesses a climate second to none in the world, and her soil with the same amount of care which is elsewhere bestowed upon it, can

be made to produce as well as that of most other countries, and much better than that of a great many. The number of merchantable commodities that can be produced in this State is almost unlimited, and it is time that all thoughtful planters should bestow some thought on the propriety of raising other crops, conjointly with cotton. Large quantities of corn are annually imported from the Northern and Western States; this is an evil, as it will cost less to raise it. Wheat once constituted an important export; now, by far the greater portion of the flour we use comes from the same source as the corn. There is no doubt that wheat can be profitably cultivated in the up-country, and of as good quality, too, as that produced elsewhere. Ramsay mentions that South Carolina flour, when branded as that shipped from Philadelphia and Baltimore, brought the same prices in the West India Islands as that which really came from those ports, and that the fraud, if detected, was considered more as an offence against truth than commerce. Hemp and flax can be produced in any amount, and will, without doubt, prove large sources of profit. The low grounds of this State have produced fifty, sixty, and seventy bushels of barley to the acre. Hops, the vine, olives, and many other commodities can be profitably cultivated, if the planters will only take the matter earnestly in hand. Every planter should make it his object to have a rotation of crops, or, in other words, to make the soil yield as much as possible.

On a large number of places, no crops of any kind are made during the winter season. This is, positively, time thrown away; what farmer, is there, think you, in Italy or Flanders, who would lose the whole winter?

Silk has been successfully cultivated in South Carolina. The plantation on Cooper River, known as "Silk Hope," not many miles from Charleston, was the scene of successful efforts in the silk culture, made by Governor Sir Nathaniel Johnson. About the year 1775, Mrs. Pinckney, mother of General C. C. Pinckney, presented a beautiful silk dress to the Princess Dowager of Wales, and another to Lord Chesterfield, both of them made of silk raised and spun on her plantation, near Charleston. These silks were admitted to be equal in quality to any ever imported into England. Why cannot these things be done again? Surely our ancestors could not have been better men than we! South Carolina seems to be designed *by nature as a silk-raising country, as native silkworms are often found in its woods producing excellent cocoons.*

No country is better adapted to stock-raising than South Carolina, its numerous grasses in summer, and the cane-brakes in winter, furnish an almost inexhaustible supply of food for cattle; its numberless oaks, for hogs, and its herbs, for sheep; and yet, there is, probably, no other country where it receives so little attention. There are thousands of acres in Charleston County now lying idle, that would make magnificent stock farms. It is no uncommon thing for a planter, owning twenty head of cows, to be unable to make more butter, during the summer season, than enough to supply his own table; and there are many, owning many more cows, who do not get milk enough, during the winter, for the use of their families.

Peculiarly blessed by nature, there are inexhaustible stores of wealth in the soil of Carolina, which only require energy, systematically applied, on the part of her sons, to unlock them. Let each live planter henceforth apply his capital to raising several crops; on a small scale at first, if he will, but let him set about the work with determination to succeed, and push it bravely, perseveringly, forward; and, though he may meet with disappointments on the road, yet success is sure to crown his efforts in the end. Keep exclusively to cotton if you will, but remember *it is king no more.*

AN AMERICAN SPECTATOR.

Worm Fences and Stock Pens.

A suggestion of real value to a community cannot be too often repeated. It should be dinned into unheading ears, and by reiterated discussion, impressed on the common sense, until the attention is not only arrested, but interest and action are awakened and stimulated.

More than a quarter of a century ago, the subject of dispensing with the almost interminable worm fences, which network the country, was brought in various forms to public notice, and since that time allusions to it have often been made. The public accord, as far as seen, has been unanimous and universal in condemnation of the practice, with the single exception of an otherwise able Germantown (Pa.) editor, who approves on the ground that it is an evidence of advanced civilization. This term is generally of vague meaning, and used sometimes *ad captandum vulgus* to avoid or suppress argument, and commend incongruities. If restricted somewhat in its import, to refining the manners, and promoting the arts and learning, what application can it have to the *art* of a zig-zag rail fence, beyond that required to construct one of plank or of metal? Why not employ this art to improve or embellish the narrow enclosures to secure stock, rather than the larger and more costly ones of entire farms? And how will the one kind more polish the manners or advance learning, than the other? Besides civilization is based on uses. All right things in this world *are* founded on their pursuit, for a certain good religion divulges the fact, and persuades to conviction by the amplest satisfactory illustrations, that the degrees of happiness enjoyed beyond the span of human life, are shown in the gradations of devotion, in the infinite variety of vocations, to the performance of *uses.* Wherefore, the usefulness or necessity of these worm fences is questioned, and will be briefly discussed.

With the altered system of labor among us, these fences have become more expensive than formerly, and with the probable great reduction of stock of all kinds, they have become more pressingly, because unnecessarily burthensome. In some countries, as England, France, Germany, Belgium, fences are partially or wholly abolished, excepting for enclosures of yards for ornament, and of lots for work and other animals. If cattle are not

"soiled," that is, kept up and fed the year round, they are herded to grass, with attendants to prevent their intrusion on cultivated fields.

Few taxes are so heavy on our time and labor, to say nothing of the destruction of our forests, as the building and repairing fences. See the cost of the practice—a practice originating partly in the ownership of vast tracts of wood lands, and extravagant waste in all our economies, and continued, through habit, inherited from our fathers, or from mere inertness in readily adopting improvements. It need not be said, from want of legislative enactments—full as legitimate as permitting an incorporated city to confiscate all swine estray in the streets—because these would have followed a wide spread and earnest disposition, on the part of the people, to change their policy.

An estimate of the fencing, in South Carolina, nearly thirty years ago, placed the number of miles at 100,000. Take this as a basis of calculation, although, probably, by one-half, under the mark. The number of rails required for a (10) ten-rail fence, with riders, is about (9,000) nine thousand for one mile, and for all these miles, nine hundred millions (900,000,000.) Their value, taking into account the worth of the timber, the splitting, hauling, and putting up, would be very moderately placed at ($100) a hundred dollars per mile, amounting, in the aggregate, to the astounding sum of ten millions (10,000,000) of dollars. The State interest being seven per cent., and the annual decay of these fences about (13) thirteen per cent., or their duration about (7) seven years, the annual interest on this investment is (20) twenty per cent., or two millions ($2,000,000) of dollars.

All this immense outlay of capital, more than sufficient to purchase all the live stock in the State—for by the census of 1850 its entire value, at high rates, was ($15,000,000) fifteen millions of dollars, and its numbers are reduced now to about one-fourth, with prices little, if any higher, is incurred solely to allow our cattle and swine the benefit of a generally poor range. If the labor required to build and repair these fences were withdrawn, and applied to the crops, it would increase them sufficiently to enable us to buy the larger part of the meat for plantation consumption, while, if the necessity for keeping them up no longer existed, we might dispose of the large reservations of land lying idle, otherwise than to supply timber for rails. In the disposal of these reservations, what bounties, if need be, might be offered toward desirable immigration. And what a relief from the oppressive land tax—to the present large landholders especially—which has already impoverished or bankrupted so many persons, and threatens to drive from the State numbers of her valuable citizens, while from these sales the means would be furnished of living more comfortably than now, and our people be compacted into more sociable propinquity, leading by close contact and mental collisions, to progress and refinement.

Abandoning the general system of fencing, which can be done promptly by abolishing the fence law, would render necessary the enclosing our stock, for that part of the year, at least, between seed time and harvest, or the

pasturing them, under the care of herdsmen, to prevent injury. But this enclosing could be made, not only remunerative for the trouble and expense attending it, but highly profitable in agricultural results.

Hogs, when properly attended in pens or lots, have exceeded 500 pounds in weight at a year old—the white Chester breed, 800 pounds at fourteen or sixteen months, and as much as 1,280 pounds at twenty-one months, increasing, for short periods, as rapidly as three or four pounds a day. While each one, when amply supplied with peat or pond mud, straw and rotten wood, or charcoal, has manufactured, in the year, three cords, or over three hundred bushels of excellent manure. Thus the manure alone would pay for the feeding, and the increase of flesh over the ordinary accumulation from our scant range—150 pounds at the utmost in a year—would be net gain. The hogs, too, would be kept from mischief to ourselves or our neighbors; would more rapidly increase; demand less time in attending to them; and be less liable to be stolen or destroyed by wild or *tame* animals, by the prowlers with four or with two legs.

It is stated in Dana's Muck Manual, that the liquid manure from one cow would fertilize an acre and a quarter of land. The solid manure is of nearly equal strength. Thus a single cow—and horse or hog in its proportion—can be made to enrich over two acres of ground per annum. The quantity in bulk is about a bushel a day, or nearly four cords a year, including both solid and liquid. Now, peat or mud contains an equal quantity of salts, with cow manure, but is deficient in ammonia. "A cord of clear stable manure, composted with two of peat, forms a manure of equal value to three cords of green manure." Therefore, throw into the stall or pen, at intervals, to be likewise removed, and protected from sunshine and too much rain, seven or eight cords of peat or mud, (dried is best, of course,) and there would be an annual return of some twelve cords, or twelve hundred bushels of capital manure—enough to fertilize half a dozen acres, which, under good cultivation, would afford sustenance to a moderate sized family. From penning all the cows, in like manner, there would accrue an abundant supply of milk, butter and cheese, yielding other items to its profits, additional to the increased quantity of manure. The general adoption of this system, with the usual adjuncts, would prevent any regret at the exhaustion of all the guano beds in the tropics. We would establish at home our own permanent sources of plant food, adding yearly to our comfort and prosperity, and abstracting nothing for these costly commercial fertilizers, which have recently caused disastrous losses to so many planters.

Beech Island, S. C.

An Ohio hog grower says that the following treatment will make the biggest hog out of a pig in twelve months: Take two parts of barley, two of corn, and one of oats. Grind them together; then cook and feed cold. He says it is the cheapest food, and that any pig of good improved breed can be made to gain a pound a day until a year old.

The Cultivation of Sugar Cane in Louisiana.

Col. D. Wyatt Aiken:

Dear Sir: Agreeable to promise, I will give you the result of my observation, with regard to the present system of cultivation of Sugar Cane in this State.

It is the opinion of all good planters, that the cane land should be deeply broken and well pulverized for the plant cane. The ratoons should be barred off and earth chopped from around the roots in early spring, so as to encourage the putting forth of the young shoots. The further cultivation is very similar to that of a well worked crop of corn. Sugar planters, like all other planters, have each one, his own particular notions as to *how* the crop should be managed, no two in any one neighborhood agreeing as to the *best* way of working the crop. Some advocate deep cultivation throughout the season, and laying by the crop with a four mule plough. Others, cultivate a light, lay-by with two mules; the result is very much the same. There is one thing, however, about sugar cane, which I noticed particularly the past season. There is no crop cultivated at the South that *could* stand such neglect. Cotton, corn, rice, or any other crop so neglected, as I saw some fields of sugar cane, would result in total loss. But the cane being a hardy plant, of strong vigorous growth, on *this*, the most fertile soil in the world, overcomes neglect and bad management wonderfully.

The labor question is of the most serious consideration with the sugar and cotton planters of this State. Free negro labor has ruined many planters the past season. Labor is now more scarce than the last year, and higher prices demanded. I cannot understand how the large plantations can be made remunerative without a change of system. I have looked closely into this matter the past season, and will here state a few reasons why a change must take place in regard to the arrangements of large plantations.

Most of the large plantations extend a mile or more from the quarters, many over a mile and a half, and the custom here, is to turn out to work about sunrise. In about one hour and a half, the bell is sounded for breakfast. One hour is allowed for that meal, from time of arrival at the quarters. The bell is then sounded again for work. Slowly, lazily, the gang of sixty or eighty free negroes commence a second walk of a mile, or a mile and a half to work, or rather to kill time. Only those who have estimated particularly, can know the full amount of time consumed in these morning walks of from three to four miles—two trips to the fields and one to breakfast. *Gang* work is done almost universally. Now this gang of sixty or eighty, are divided off, one or two to each cane row. As it is *gang* work, it would be very unreasonable to expect those arriving *first* at the field, to *set in* before the very *last* man or woman is ready. Then the work begins. This goes on slowly for about three acres in the length—the end of the cut. Now those who are at the end of the cut first, wait for the last man again. Then the moving up to take other rows. If sixty rows are taken up at a time, it

involves the necessity of a walk of four or five hundred feet before the alloted row is reached. You are a planter, you know the movements of the free negro; you can judge of the quantity of work done by the time the bell sounds for *dinner*. The walk to the quarters, the necessary and unnecessary delays, with a little more time killing, winds up the day, and the dollar per day, per hand, is out of the planter's pocket. Where the old time slave overseer is employed, the attempt to push matters through, by brute force, is persisted in. You know this must result in failure and ruin. Scientific agriculture, is regarded as a humbug, (*book farming,*) by the old slave overseers, and they can generally find parties that can be humbugged into their way of thinking. But this will not last many years.

I think the Chinese labor has not been as satisfactory as we had hoped. They were unaccustomed to our work, and did not take to it as readily as we had anticipated. They are improving however, and I trust will make good and reliable laborers. A thousand more will arrive here in a few weeks.

I am quite satisfied that sugar can be made to pay, but not with the present system of large plantations. White men can and must be employed. I will write you further on this subject at some future time.

Lower Coast, La., 1871. F. W. J.

Rural Reviews.—February Number.

[The following notes, on our February number, from an esteemed contributor, were intended for our last, but were crowded out. They have not lost their value, however.—Ed.]

Having been what one of my friends calls a "theatrical" planter, I have been trying experiments all my life, and the account of some of my failures may save others sometimes from serious losses. And first allow me to beg you for a few of your

RED OATS TO START WITH.

To give you some idea of what may be made from a little seed, economically used, I will give the results that I obtained from a small quantity of seed wheat. Having moved to the middle section of the State early in the war, I was anxious to grow wheat for the use of my own family, but seed was very scarce and dear. A friend gave me about six quarts of Schley's Rust-proof White Wheat, a very large, plump-grained variety, weighing fully 60 lbs. to the bushel. As I was anxious to make the most of this seed, I put it into the hands of one or two middle-aged and reliable women with directions to put a few grains, with finger and thumb, between every two turnips in my root crop, which was faithfully done, and the crop was ten bushels of beautiful wheat. I am trying this season to see how much rye I can make from one quart, as that was all the seed that I could afford to purchase, and if you wish, will report the result.

EXPERIENCE WITH CORN.

The author of "Practical Experience in Planting" says: "I have examined a great portion of all the corn in the neighborhood, and failed to find a good corn." After trying a great many varieties of corn, as seed, I came to the conclusion that the pure flint was, in the long run, not only the best, but the most certain variety for our low country; and my crops were equally favorable in Orangeburg county during the war. The grain being hard, the seed does not rot so quickly in damp lands, or a damp season; the stalks are more vigorous, therefore better able to bear a crop; it stands drought better while growing, fills better in unfavorable seasons, every nubbin having at least a few grains; it rots less in the field, frequently hardly any at all, is less injured by the weevil after it is gathered and housed, being so hard and flinty; and, lastly, it makes the very best fine hominy, and if not the best meal, quite as good as any. For about twenty years past, this has been my favorite variety, and I have kept it pure by constant selection.

THE OPIUM POPPY.

The seed ought to be sown in the fall, to make a fall crop, as it does not mind frost. I made some opium during the war, but when made into laudanum, it invariably nauseated everybody who took it; I, therefore, lately made a very strongly opiated tincture of it, and used it as a panacea for all cuts, bruises, etc., etc., and prefer even common laudanum for this purpose to all other pain-killers, etc. The plants cannot be transplanted, unless with extra care. I never could get one to grow. I cut or incised the heads spirally, making two or three incisions each time into each capsule or head. The seed from the incised heads will not grow; therefore some plants must be left for seed. Messrs. J. M. Thorburn & Co., of 15 John street, New York, offer the seed at $2 per lb.

WHY TURNIPS ARE SOMETIMES BITTER.

In your remarks upon my experience with turnips, you say that it is "suggestive," so I must say are your comments. I now have the idea that turnips sown early, and grown during the hot weather, are apt to be bitter, while the same sown later are not. The Early Red-top Strap-leaf being a variety for early sowing, and generally the earliest sown, is *consequently* generally bitter; and I can remember, in all my experience, but one season, 1867, when they were not, but were really a delicious turnip; and if I remember aright, from circumstances, they could not be sown early, yet that same season the Robinson's Golden Ball, the most beautiful variety that I have ever seen, and even the White Norfolk, were so bitter that I have sown neither since; and the past summer, the Red-top, Yellow Globe, and Yellow Aberdeen were all sown 13th August, and all proved too bitter for our taste, while the White French, not having been sown until 13th September, was perfectly free from the least bitterness. I said nothing against the *quality* of the Sweet German, for I had not tasted it, but it has proved a slow grower and late turnip, and is still small.

CATTLE AND SHEEP.

I have had no experience with the Brahmin, but have tried the Devons for many years past, and found them to stand the climate and our poor pastures well. I have never tried the Ayrshires either, but all that I ever heard of stood the climate better than any other British breed. The Durhams in my neighborhood seldom survived the summer, even when housed during hot weather and carefully fed and attended to all the year.

I was so thoroughly convinced that the Marino and its grades were the breed of sheep best suited to our climate and pasture, that I never was tempted to try any other. They certainly proved remarkably healthy and long lived, dropping their lambs earlier than any other breed that I know, sometimes beginning in October; and the meat is the sweetest of any. My lambs and mutton always were prized in our private markets in Beaufort. I did not think the flesh at all inferior to any mountain mutton that I ever ate, and the clothing made in Augusta, Ga., from my wool, was not only warm, but very durable.

HOGS.—BLACK ESSEX BEST.

I think that a little reflection upon the merits of the Black Essex and the Chester County White Swine will satisfy any one that the former is much the better breed for us. From our hot climate, and other circumstances, we want a hog that will make good meat, with a plenty of lean, and can do something towards supporting himself, while the Chester County Whites are too fat and indolent either to take on lean meat or do anything to support themselves, and, when well kept, prove manufacturers of lard and not of meat.

THE BEST SELF-SEALING CAN.

Apropos to that "Can of Peaches." The best self-sealing jar for preserving fruits, etc., is the Valve Jar, but it is too expensive, compared to the tin can, for putting up fruit for sale. I send you a circular of it. I have a sample one with shrimps.

LANGSTROTH'S BEE-HIVE.

The patent right formerly cost, with a sample hive, $5, but it requires such nice work, that it could be made only by a complete carpenter, and near a mill running a fine saw. It certainly is, as far as I know, the best hive yet invented, enabling the bee-keeper to inspect and control all their operations, as far as they can be controlled. Frames are placed in the hives for the bees to build each comb upon, separate from all others. The hive is easily taken to pieces, each comb taken out and inspected, and moths taken out, if any; queen cells cut off or put on, and the bees are easily made to take the hives. His book gives also the best history of the bee, and the best instructions how to manage them. Unfortunately, they will have unaccountable antipathies, and I was always subject to them, so that, although fond of them, I never could go near a hive without immediate danger of being stung, and gave them up as ungrateful wretches.

LUCERNE

I never could get to thrive with me, and doubt whether it can be cultivated successfully in any of our ordinary soils without much extra care, manure, and preparation. R. C.

The Credit System in Cotton Planting, and its Results.

The following remarks from the pen of a Mississippi correspondent of the *Chicago Tribune*, are somewhat severe, and put one of the grand errors of Southern planting in, perhaps, too strong a light before the world; but, though there are many honorable exceptions, we fear the writer is, in the main, essentially correct in his statements. The truth is not always palatable, but it is generally wholesome; and our best friends are those who, in a proper spirit, point out our faults, with a view to their correction:

No class of people with whom I have ever been acquainted are so utterly reckless in the matter of running themselves head over heels in debt, as are the planters of the South. So it has been from time immemorial almost, and so it seems destined to continue. Before the war, they purchased with a reckless prodigality, the chief incentive in life, apparently, being to stretch their credit to the utmost, to make cotton, with which, with little regard to creditors, to buy more negroes, with which to raise more cotton, and so on, from year to year. Nor does there seem to be any improvement under the new order of things. As in the olden times, the planter buys with a perfect recklessness, that he may stretch to the utmost limit his number of bales. His only possible chance for payment lies in a successful crop. He, therefore, gambles—stakes his all upon the chances. If the crops turns out well, he is able to pay up, and again stake all upon a still bigger crop next time. If the crop fail, as cotton, being a precarious crop, is at best apt to do, or if the price is below the expected standard, the creditor is forced to take what he can get, oftentimes, perhaps, to whistle for his pay; and in any event he must again shoulder the planter through another crop, in the desperate hope of making himself good. Of course, in taking such chances as these, the country merchant endeavors to keep a fair balance between profit and loss. In trusting the planter for supplies, he not only charges, in the first place, a round profit on his goods—say fifty per cent.—but in addition to this, bleeds the planter on the amount charged to his account in the way of interest, to the tune of not less than three, oft-times five per cent. per month. As the credit stands for, say, on much of the amount, ten months, the planter is thus seen to pay on a large proportion of his supplies the sum of fifty per cent. on the amount of the original purchase. Add this to the fifty per cent. profit on the goods, and it is seen that by the credit system in vogue, the planter is mulcted in the sum of fully seventy-five per cent. over and above what he would pay for the goods were he "before hand" sufficient to purchase the same supplies at wholesale for cash. Now, incredible as it may seem to the outside world, this is but a fair showing of the credit system upon which the cotton planter makes his crop. Nor is this, by any means, the whole of the difficulties under which he labors.

Leaving out a few isolated sections where some little effort is made in the way of a better order of things, and the planter absolutely purchases his entire supplies from abroad. With, perhaps, as rich land as any in the world, he yet raises, oft-times, not a single bushel of corn, and in almost any case, not a tithe of the corn, bacon, or other supplies he must have. Somehow, his idea of farming never goes beyond cotton, and in the raising of this, the study of economy is no part of the programme. The main thing is, to raise as much as possible, without a thought of the consequences of such a course of action. That success can possibly attend a people under such a system of agriculture long at a time, is morally impossible. Contrary to the general idea, it never

did attend them in the past. The records of the bankrupt court show the majority to have been bankrupt before the war, and I can show, beyond all cavil, that, with nearly all of the most successful, the profits came almost solely from the increase of the negroes, instead of the planting proper.

This year, the crop of cotton is, save it be that of 1860, undoubtedly as large a one as any ever raised. In fact it is generally admitted by the planters, that, were it all picked out, it would fully equal that of 1860. Probably fully half of that raised has been upon the share system. The planters, negroes and all, have run in debt, and the merchants have trusted all with a prodigal hand. All this has been done in expectation of a good price for cotton. It turns out to be very low as compared to that calculated upon. Taking the whole of the Southwest, it may safely be said that nearly, if not quite as much, has been advanced upon the crop, in the way of supplies, as can be realized thereon. The consequences may readily be imagined. The planter, finding himself no better, even worse off than a year ago, and reckless thereby, is too apt to ignore his creditors and give them the slip, by sending his cotton elsewhere for sale. The black, seeing no reason why he should do better than the white, finding his share will bring him barely enough to leave him where he started, perhaps leaves it unpicked, and his creditors to whistle, while he picks out the crop of a neighbor for pay. Nor is it, indeed, the crop of the black alone that is left unpicked. On the contrary, as I have it from the merchants, the blacks, as a rule, pick out and bring in their cotton far more promptly than the whites themselves. Between the two, however, for reasons like these, and the fact of the crop being a very large one, there is, perhaps, twenty per cent. of the cotton that will remain unpicked. The country merchant, very naturally, is making desperate efforts to make himself good. This explains the fact, which I have heard commented upon by travellers as passing strange, that at all of the inland towns along this road a higher price is being paid for cotton than it will bring in New Orleans. Upon the same principle that the cotton planter readily consents to pay almost any price for supplies with which to make his crop, the merchant consents to pay almost any price for the cotton with which to make himself safe. That either will make themselves whole I very much doubt. Considering his extraordinary profits, perhaps the merchant may—the more especially so as he has in most instances, in addition to a lien on the crop, one on the farming stock as well. That the producer, however, will fare as well I cannot believe. On the contrary, I can well believe them worse off than they were a year ago, in that their credit must of necessity be much impaired by the experience of those to whom they must look for supplies.

My own conviction is, that the South is absolutely the poorer to-day for the last crop raised, as it has been literally eaten up in advance. For all this I can see no hope, save in a complete and final revolution in the whole system of planting. This credit system to begin with, is the greatest curse of the South. Just so long as the planter can command credit, just so long he will continue to overreach himself in gambling on the coming crop, the least failure in quantity of which must, of necessity, prostrate the whole interests of the country.

Chinese Sugar Cane.—A farmer of Stark County, Ohio, states that from a package of Chinese sugar cane, received from the Department of Agriculture, and planted on 28 rods of well prepared ground, he derived 45 gallons of syrup, equal in flavor to the best New Orleans molasses. With a better mill, he thinks he might have expressed 50 gallons. The product was at the rate of 257 gallons of syrup per acre, worth one dollar, local price, per gallon.

The State Agricultural Society.

The article in the January Number of THE RURAL CAROLINIAN, upon the origin of the State Agricultural Society, has put me to thinking, and the wonder seems to be, why a Society, organized for such laudable purposes, and engineered by such distinguished gentlemen, has achieved so little practical good. There must be a screw loose somewhere, for it always starts off well, and promises success. It is our duty and our interest to study out the cause of failure. The Legislature of 1845 appropriated a sum to defray the expenses of publishing the proceedings of the State Agricultural Society. The work was printed in Columbia, by Summer and Carrol, in 1846, and contains an amount of valuable information connected with the agricultural interests of the State, to be found in no other volume. Besides the proceedings of the State Agricultural Society proper, there are statistics, essays, letters, and analytical experiments of rare interest.

The Anniversary Orations of Gen. McDuffie, (who was an admirable planter,) Gen. James H. Hammond, Hon. John Benton O'Neall, R. W. Roper, Esq., Hon. Joel R. Poinsett, are capital and apropos. The Memoir of the Cotton Plant, by Mr. Seabrook, completely exhausts the subject.

An Essay on Malaria, by Professor Dickson, of Charleston; a Report by Fred. A. Porcher, Esq., on Manures; various reports on Marling by Hammond, Porcher, Ravenel, and others. Marling, its Facts and Estimates, by that grand old man, Edmund Ruffin, of Virginia; Analyses of Cotton, Wool, Cotton Seed, Indian Corn, Yam, Potatoes, and Marls, by Professor Shepard, etc.

Upon reading these reports, essays, etc., one is struck by the conclusion, that we have made very little progress—that we are still complaining of the same obstacles, the same apathy, the same blindness to our own interests, and are still like direction-posts, pointing the way to places to which we never go. I have been connected with the State Agricultural Society since 1839; I have been a reader of, and occasional contributor to, the agricultural press for thirty years; I have attended the meetings of agricultural societies in various parts of the State, and corresponded with the best informed agriculturists in the country; I have worked at the head and at the tail of country agricultural societies, and I have come to the conclusion that the "lion in the path of improvement" is the lack of information on agricultural subjects, and that no permanent good can spring from agricultural societies until we reform this altogether.

To produce permanent reform in our agriculture, you must reach the masses—you must get into a man's family group, and by degrees convince him, that he has carried the pumpkin in one end of the bag and the rock in the other long enough. You must satisfy him that everything in print is not humbug, and that you are in earnest about his improvement.

Public speeches, grand fairs, raree-shows, and the like, will not do. You only reach a certain class by this means, but do not get to the heart of your

work. In sober truth, fairs are getting to be humbugs—at least, they are earning that reputation—which will go very far towards neutralizing the good they might do.

It may pay expenses to get up a crowd, but does it improve the agriculture of the country?

A very large part of the crowd attending a fair don't care a fig for the utilitarian part of the show. They come to see the pretty women, fine specimens of fancy work, splendid horses, fast racing, and all that. It is a harvest for the shopkeepers, liquor saloons, and hotel-keepers, but does it advance agricultural improvement?

With all the disadvantages, the social benefits of such meetings are very great, and I should regret to see them given up; but can we not have matters improved?

Our people are not averse to reading; they have been accustomed to politics and general news; and a taste for agricultural literature has not been cultivated. When you can make every farmer in the country feel the want of an *agricultural* paper, your agricultural societies, fairs, and all that, will prove a success and a blessing. Let every reader of THE RURAL CAROLINIAN, every agent of a plough, machine, or agricultural implement, every commercial manure manufacturer, and seed seller make an effort to push THE RURAL CAROLINIAN into the farmer's home. ***

Cotton Seed as Manure.

Last spring I obtained from Southwestern Georgia a variety of cotton, entirely new to our section of country, but familiarly known there as the Moina. The place selected to plant it, for convenience, was a very poor piece of wire-grass land, adjoining a sandy scrub hammock. About one-third of it was planted in sugar-cane, soon after the war, but finding too much poverty in the ground, the stubble was removed. Another third, made a very fair crop of "nigger killers" in 1869, and the rest was the fresh wire-grass.

About the 20th of April, the rows were laid off four and a half feet apart, with a large bull-tongue plough, and about twenty-five bushels of not thoroughly killed cotton seed, per acre, applied in the drill. Two furrows were then thrown on this with the ordinary "twister," and, about the first of May, two more furrows were thrown to the bed, which was immediately opened with a small bull-tongue, and the seed carefully dropped in chops two feet apart in the drill, as I only had a *small* two bushel sack of seed to plant the ground with. At the time of planting the ground was tolerably moist, but immediately thereafter we were visited by a drouth, which continued till near the first of June, and the consequence was, a bad stand of cotton; for, having no more seed, replanting was out of the question. Nearly one-fifth of the ground was thrown out at once, and of that which was worked, I am satisfied that there was less than two acres of a stand.

About the 10th of June, a little over one acre of the missing places was planted in corn. The cotton was ploughed three times with a wing sweep, running very shallow, and hoed about a week after each ploughing. Now for the result: Eighteen bushels of heavy-eared corn, and 2,700 pounds of seed cotton, carefully weighed as it was picked. The cotton continued steadily to bloom and fruit till killed out by the heavy freeze of the 24th of December, at which time there must have been at least five hundred pounds of cotton in the field had it all matured.

Without meaning to disparage other fertilizers, I will mention that in April I planted and worked eighteen acres of a better class of pine land, though much older, and applied one sack, or one hundred and sixty-seven pounds of the (perhaps deservedly celebrated) Wando per acre. The Dickson seed was planted, and the crop, all told, amounted to four bales of cotton, weighing, in the aggregate, seventeen hundred and seventy-eight pounds. Comment is unnecessary, except to say that cotton seed, as a fertilizer, suits me better for cotton and corn than anything else I get.

Before closing this communication, Mr. Editor, I would ask if you can give any information as to the comparative value of whole and ground cotton seed as a manure. I have seen it stated that the ratio of value is as one to three, or twenty-five pounds of the ground is equivalent to seventy-five pounds of whole seed as a fertilizer. Any light on this subject will be duly appreciated by at least one of your constant readers.

B. W. POWELL.

Micanopy, Fla., January, 1871.

[When you have the sound, unground cotton seed well covered in your soil, you have, perhaps, secured to the land the full benefit of its fertilizing qualities, but you will not get the whole—probably not half—in the succeeding crop. The ground seed acts much more quickly. We do not know what the actual difference in the *immediate* results, between whole and crushed cotton seed is, but in an experiment narrated by a correspondent of the *Southern Cultivator*, *thirty* bushels corn to the acre was realized from an application of crushed seed, while the same quantity of uncrushed produced but *nineteen*.—Ed]

Good Hints on Cultivating Corn.

Some six or seven days after corn is planted, (a writer in *South-Land* says,) run over it with a heavy iron-tooth harrow, double team. When it is about hand high go into it with the cultivator, the front tooth taken out, contracting the frame so that the first two side teeth shall run as close as possible without ploughing up. Straddling the drill with your double team pass rapidly through it. Take the hoe, rustle the dirt through the drill and around the stalk, because the cultivator has not thrown enough. Thin as you go, whatever distance apart you require for a stand, *one stalk* in a place.

Remember that a plant has no greater enemy than another plant of the same species. Having finished with the hoe, expand your cultivator (all teeth in) so as to cover all the ground left in the middles. Double the team and go ahead. Thus, with what is only equal in time and labor occupied in running two furrows with a turning plough, you have dirted your corn, cleaned out and thoroughly stirred up, to the depth of the teeth, the ground before it has had time to bake and harden, giving thus a mellow bed the full width of your middles for the tender rootlets to strike out in search of their proper food. This, the first working of your corn, will just about bring you to cotton planting, which should be done when the blackberry is in *full bloom.*

Having planted your cotton, turn right back on your corn. No questions are to be asked as to whether it needs work or not. Don't be ashamed to work in it with neither grass nor weeds to kill, (most probably there are none,) even though the working be condemned by some carping neighbor who can "see no sense in it." Run around with the sweep. Judge from the growth whether the roots have spread across the middle. If so, then finish with the sweep. If not, and the stalks will not interfere with the passage of the double team, hitch on to the cultivator. Set the proper width to complete whatever the sweep left; chop through (nothing more) the drill if there is anything worth cutting out. The weeds only will deserve attention.

The Cultivation of Cuba Tobacco in Florida.

Mr. Joseph M. Hernandez, of St. Augustine, Florida, gives in the *Southern Field and Factory*, the following very well considered directions for the cultivation of that superior variety of the tobacco plant known as Cuba Tobacco.

The soil for the Cuba tobacco ought to be of a rich sandy loam, neither too high nor too low—that is, ground capable of retaining moisture. The more level the better, and, if possible, well protected by margins. For raising plants, preparing and cultivating the land, a similar process may be adopted, as that for the common tobacco crop of this country. When the plants have acquired twelve or fourteen leaves, and are about knee high, we should begin to top them, by nipping off the bud, with the aid of the fingers and thumb-nails, taking care not to destroy the small leaves immediately near the bud; for, if the land is good and the season favorable, those very small top leaves will, in a short time, be nearly as large, and ripen quite as soon as the lower ones, whereby two or four more leaves may be saved, thus obtaining from sixteen to eighteen leaves, in the place of twelve or fourteen, which is the general average.

The topping of the tobacco plant is absolutely essential in order to promote the growth, and to equalize the ripening of the leaves; it should be commenced the instant the bud shows a disposition to go to seed, and be immediately followed by removing the suckers which it will now put out at every leaf. The suckers must be kept down.

The Cuba tobacco plant ought never to be cut before it comes to full maturity; which is known by the leaves becoming mottled, coarse, of a thick texture and gummy to the touch, at which time the end of the leaf, by

being doubled, will break short. It ought not to be cut just after a rain, as the leaves have then lost their gummy feel; in a day or two the gum will again coat the surface of the leaf.

About this period the cultivator is apt to be rendered anxious by the fear of allowing the plants to remain too long in the field. He should be on his guard, not to destroy the quality of his tobacco by cutting it too soon. When the cutting is to commence, there should be procured a quantity of forked stakes, set upright, with a pole or rider, sitting on each fork, ready to support the tobacco and keep it from the ground.

The plant is then cut obliquely, even with the surface of the ground; then, after tying two stalks together, they are gently placed across the riders or poles prepared to receive them. In this state they are allowed to remain in the sun or open air until the leaves are somewhat wilted. Then place as many plants on each pole, as can be conveniently carried, and take them to the drying house, where the tobacco is strung off on frames prepared to receive it, leaving a small space between the two plants, that air may circulate freely among them and promote their drying. As the drying advances, the stalks are brought closer to each other, to make room for those which remain to be housed.

In drying the tobacco, all damp air should be excluded, nor should the drying be hastened by the admission of high drying winds. This process is to be promoted in the most moderate manner, except in rainy seasons, when the sooner drying is effected the better; for it is a plant easily affected by the changes of the weather, after the drying commences. It is liable to mildew in damp weather; that is, when the leaf changes from its original color to a pale yellow cast, and from this, by parts, to an even brown.

When the middle stem is perfectly dry, it can be taken down, and the leaves stripped from the stalk and put in bulk to sweat; that is to make tobacco of them. The leaves are to be stripped from the stalk in damp or cloudy weather, when they are more easily handled and the separation of the different qualities rendered more easy. The good leaves are kept to themselves for "wrappers," and the most defective ones for "fillings."

When the tobacco is put in bulk, the stems of the leaves should all be kept in one direction, to facilitate the tying of them in "hanks" afterward, making the bulk two or three feet high and of proportionate width. To guard against the leaves becoming over-heated, and to equalize the fermentation or "sweating," after the first twenty-four hours put the outside leaves in the centre, and those in the centre to the outside of the bulk. By doing this once or twice, and taking care to cover the bulk with sheets or blankets, so as to exclude all air from it, and leaving it in that state forty days, the tobacco acquires an odor strong enough to produce *sneezing*, and the other qualities of cured leaf. The process of curing may then be considered as completed.

Then take some of the most injured leaves, but of the best quality, in proportion to the quantity of tobacco made, and place them in clear water; there let them remain until they rot, which they will do in about eight days.

Next break open your bulks, spread the tobacco with the stems in one direction, and dampen it with this water, in a gentle manner, in order that it may not soak through the leaf, for, in that case, the leaf would rot. A sponge is used in Cuba for this delicate operation. Then tie the hanks of from twenty-five to thirty leaves.

This being done, spread the hanks in tobacco house for about twelve hours to air, in order that the dampners may be removed, afterwards pack them in casks or barrels, and head them tight, until you wish to manufacture

them. The object in dampening the tobacco with this water is to give it elasticity, to promote its burning free, to increase its fragrance, to give it an aromatic smell, and to keep it always soft. This is the great secret of curing tobacco for cigars, as practiced in Cuba.

We have here (St. Augustine, Florida) three cuttings from the original plant. The last will be of rather weak quality, but which will be agreeable to those who confine their smoking to weak tobacco. In the "ratooning" of the plant, only one sprout ought to be left; all the other sprouts should be broken off and destroyed.

The houses necessary for curing this tobacco ought to be roomy, with a passage-way running through the centre, from one extremity of the building to the other, and pierced on both sides with a sufficient number of doors and windows to make them perfectly airy,

In order to obtain vigorous plants, the seed ought to be procured from the original stalk, and not from the "ratoons," by allowing some of them to go to seed for the express purpose. Every three or four years we should send to Cuba for fresh seed.

Cutting and Curing Hay.

The necessity that arises for making provision for the sustenance of amimals, especially in the more northerly regions of our country, gives rise to the practice of cutting and curing hay, and such other materials as can be made available for the purpose intended.

And, although animals will live when fed wholly upon the various grains and such roots as the farmer can raise, nature seems to be better satisfied, if the animal is fed, partially at least, upon that particular product which it has itself furnished in the greatest profusion, and which is found in the various grasses that so completely cover and clothe the earth's surface with its living green. There has never been any thing that is better calculated to promote the health, growth and prosperity of the animal creation than the sweet herbage of the hillside, and in fact nothing better calculated to effect a productive secretion of rich milk. We have, then, these facts before us to be considered when we commence our labors for a winter's supply of food for our stock. One of the first principles to be observed is to secure the crop of hay in such condition as will be nearest the natural condition of the food, and no one can fail to see, that if, as is frequently observed, the grasses are left to stand until even the seed is matured, a large proportion of the stalk is changed to and becomes woody fibre, which is nearly indigestible, and hence, as a natural consequence, is with difficulty assimilated by the animal. It is said by Baron Liebig that "a portion of every plant that matures its seed passes off or back to the earth as excrementitious matter;" if this is so, as it undoubtedly is, then it is clearly to be perceived, that it is against the interest of every farmer to omit the season for cutting his hay, until it has passed into this semi-worthless state.

It has been said by eminent agriculturists, that they would as soon or sooner feed the straw of their various grains to their stock, as late cut hay

We then have another fact staring us in the face, and that is the evidence of the cattle themselves, and they are presumed to be competent witnesses in the case. And what do they say? As plainly as language of brutes can be expressed, it is, that late cut, hard, wiry hay, is to them unpalatable, and does not answer the demands of nature. Cattle will also upon such food lose flesh; not only that, but milch cows will greatly diminish the amount of milk furnished, when fed upon such food. Now for the opposite conditions. Of hay cut just before maturity, or in that particular stage of growth in which the stalk is richest in gum, starch and sugar, if well cured, all kinds of stock will greedily devour the same, and with judicious feeding, will take on flesh; not only that, but it is a settled fact, that milch cows will produce more milk when fed upon rowen hay or after-math, than when fed upon any other kind of dry fodder, and this is, of course, much the nearest to the young growth of grass which is the summer food of stock.

Here then, is a point sufficiently settled to be followed in practice, and that is, that the value of hay for feeding purposes, increases in proportion as it is cut in a young, growing state. This is practiced in some portions of Switzerland, where five, six, or even more tons of hay are cut from a single acre of ground, it being the result of the accumulations of many successive crops of a growth akin to our after-math, and which, as a consequence, furnishes a valuable fodder. Having now shown the condition of growth most desirable to furnish good hay, it still remains to explain the manner of procuring the same, that it be not injured, as thereby its value is greatly diminished—and it is admitted that a poorer quality of hay secured in good order, is preferable to good hay put in the barn in bad condition, whereby the nourishing qualities of the food are destroyed. And first having learned that the proper time to commence to cut hay, is when it is in bloom or earlier, let the same be cut with as little dew or moisture upon it as possible, which being thoroughly spread and occasionally turned, as the surface becomes somewhat dried, before the moisture of the atmosphere commences to fall, should be raked, and if not sufficiently cured to be placed in the mow, either left in the winrow or secured in heaps to be opened, and the curing process completed on the next day.

A method adopted by some, is to do a portion of the cutting in the afternoon just before the close of the day, and which lies undisturbed until the following day, and is then cared for; this method allows of carting in the middle of the day when the hay is hot, and can, therefore, go in, in a slightly green state. In all possible cases, hay should be secured in the barn without being wet with rain at all, as much of its value is extracted thereby, as well as occasioning double labor in the drying of the same sufficiently to be placed in the mow, which, if convenient, should be separate from good hay. There is more danger from external moisture in the curing of hay, than from any other cause; there is little danger from the juices contained in the stalk; there is, again, almost as much danger from over-curing, as there is from not drying the moisture out of the hay, in fact, there is such a thing as exposing

the hay to the sun for too long a time, so that it becomes as dry and hard as straw, and is little better than if allowed to stand too long in the field. Some as good hay as the writer ever saw, was cured with hardly a ray of sunshine upon it, and to outward appearance, was about as green as when cut, but was housed to avoid rain, and yet, the same in the spring presented that sweet, fragrant appearance that so delights the appetite of the stock. The secret of it was, that all the external moisture was dried out thoroughly, but it preserved all of its richness in the thickened juices of its stalks. In some cases, the manner of curing clover hay, is: after having cut the same, let it stand in the swath until before the dew commences to fall, when the swath's are turned over and so allowed to remain until the afternoon of the same day, when it is pitched together into small heaps, and allowed to stand for two or three days, the heaps are then turned over, and when the dampness is dried off, carted in the middle of the day to the barn; in this way less of the leaves are broken off and lost. In all cases hay should be sufficiently cured so as not to heat or steam in the mow, any more than the slight natural sweating of hay which attends the settling of the mow. Let these few simple principles be observed in the cutting and curing of hay, and little fear will there be of musty unprofitable mows.

Columbia, Conn., January, 27, 1871. W. H. YEOMANS.

Cultivation of the Castor Bean.

Land that is capable of producing a good crop of corn, is suited to the cultivation of the Castor Bean; it is thoroughly ploughed and harrowed, and marked out with furrows at six feet apart. At every tenth row a space is left wide enough to allow of the passage of a cart to collect the crop. To secure a good stand, four seeds are planted at the intersections of the furrows; some scald the seeds, allowing them to remain in the water for twelve hours before planting, and then drop two of the seeds with two that have not been so treated. The scalded ones germinate soonest, and should they be cut down by frost, the others will come up later and thus save replanting. A bushel of seed is sufficient for 18 or 20 acres. The planting should not be done until frosts are probably over. When the plants are well established, all but the strongest one in each hill is removed. The soil is to be kept mellow and clear of weeds by use of the shovel, plough, or other implement, and the clusters or spikes of beans ripen unevenly, and they have to be collected every few days. The pods, as they ripen, burst, and throw the seeds out with considerable force, and to avoid waste, the spikes must be gathered as soon as they turn a brown color. They are cut, thrown into the cart, and carried to the curing-house or popping yard. An out-building in which to cure the beans, may be fitted up with shelves and a stove, or a special building may be put up for the purpose. Where artificial heat is used, it should not exceed 120 degrees. An open shed with a floor and boards around the sides to prevent the beans from escaping, is also used, and the pods are dried without artificial heat. Whatever place is used as a popping yard, it is necessary to prevent the beans from coming in contact with the damp earth, as well as to keep rains from wetting the spikes. After the beans have all popped out they are cleaned by being run through a fanning-mill. The beans weigh 46 lbs. to the bushel. As the pressing of the oil is in the hands of a few persons who usually contract directly with the growers for the crop, the price of the beans is not quoted in the market reports.

Experiments with Fertilizers.*

EXPERIMENT No. 1. NAME OF FERTILIZERS.	No. bushels of Cotton Seed.	No. pounds Fertilizers.	No. pounds Seed Cotton per acre.	No. pounds Seed Cotton in excess of no manure.	Value of Seed Cotton made, at 4c. per pound.	Value of Cotton in excess over no manure.	Cost of Fertilizers used, per acre.	Gain, deducting cost of manure.	Loss.
1. Nothing	.....	.....	720	.....	$28 80	.....	.....	.....	.....
2. Cotton Seed, (Green,) at 20c.	30	.....	900	180	36 00	$7 20	$6 00	$1 20	.....
3. " " Chincha Guano.	15	75	1,000	280	40 00	11 20	6 66	4 54	.....
4. " " Guanappe "	15	75	830	110	33 20	4 44	5 55	.....	$1 11
5. " " Wando	15	160	830	110	33 20	4 44	8 12	.....	3 68
6. " " Etiwan No. 1	15	160	1,050	330	42 00	13 20	7 64	5 56	.....
7. " " Acid Phosphate.	15	160	1,200	480	48 00	19 20	6 92	12 28	.....
EXPERIMENT No. 2.	Pounds Guano.	Pounds Phosphates.							
1. Nothing	.....	.....	810	.....	32 40	.....	.....	.....	.....
2. Chincha Guano	150	.....	1,230	420	49 20	16 80	7 32	9 48	.....
3. Guanappe Guano	150	.....	1,170	360	46 80	14 40	5 11	9 29	.....
4. Wando	.....	200	1,050	240	42 00	9 60	6 40	3 20	.....
5. Etiwan No. 1	.....	200	1,020	210	40 80	8 40	5 80	2 60	.....
6. Acid Phosphate	.....	200	1,000	190	40 00	7 60	4 90	2 70	.....
7. Chincha Guano, Wando	75	100	1,220	410	48 80	16 20	6 86	9 34	.....
8. " " Etiwan No. 1	75	100	1,165	355	46 60	14 20	6 56	7 64	.....
9. " " Acid Phos'te	75	100	1,140	330	45 60	13 20	6 11	7 09	.. ..
10. Guanappe " Wando	75	100	1,170	360	46 80	14 40	5 75	8 65	.....
11. " " Etiwan No. 1	75	100	1,260	450	50 40	18 00	5 45	12 55	.....
12. " " Acid Phos'te	75	100	1,300	490	52 00	19 60	5 00	14 60	.. ..

These experiments were made on high, dry sandy land, with coarse yellow sand and clay subsoil, which had been a peach orchard, unmanured, for about twenty years. The trees were cut down in 1869, and No. 1 planted in sweet potatoes, manured with lot trash. No. 2 was planted in cotton, manured with lot scrapings and guano. In 1870 the rows were laid off, four feet apart, with a wide shovel, and a subsoil plough, drawn by two mules, run in each furrow before depositing the manures. To supply vegetable matter for the proper action of the fertilizers, No. 1 had trash from stock-hog lot distributed in each furrow before depositing fertilizers. No. 2 had the advantage of rather better vegetable manure, and of better manuring the year before. Cotton Seed is estimated at 20 cents per bushel, and the other fertilizers at cost at Darlington Depot, Cheraw and Darlington Railroad.

*Made for the Hartsville Farmers' Club, in 1870, by T. C. Law, and published by request of the Club.

How to make Nitre-Beds.

A useful method of obtaining fertilizing matter (the *Journal of Applied Chemistry* says,) is by making nitre-beds for the production of nitrate of lime, which can be used as a top-dressing for the land, or to increase the activity of the compost heap. These beds are readily made by mixing animal and vegetable rubbish with air-slacked lime in loose heaps of any desired length, and six feet wide by three high. These should be arranged under a shed to protect them from the sun and rain, and kept moist with ditch water and animal or putrescent fluids. The heaps should be built upon ground that will not absorb fluid, and occasionally spaded over, and in from four to twelve months, according to the heat and abundance of animal matter, they will be rich enough to be used as a top-dressing, or put into compost with other fertilizers.

A succession of these beds can be formed in which all kinds of offensive garbage, night soil, and every kind of animal texture will be consumed with profit to the farmer, by creating one of the most active manures, and which can be used with special benefit for tobacco. Muck, peat, fine mold, river or pond mud may be used with the nitre-bed when a basis is wanted. The making of these beds will require more care and attention than that of ordinary composts, but when once properly undertaken and conducted under the master, he will find that his "manufactory" of nitrates will afford him as much interest as any other branch of his agricultural pursuits.

Some Experiments and their Results.

In January, 1870, I commenced on a piece of pine land which had been in cultivation thirty years, with little rest or manure during the time. It had been cultivated in cotton the year before. I laid off my rows four feet apart with a shovel plough, running in the same furrow with a temporary subsoiler made by knocking the wing off of a common bar and sword turning plough, using the bar and sword with a little alteration as a subsoiler. This ran down to the depth of about seventeen inches, I then applied cotton seed, green or sound, at the rate of 1,000 lbs. to the acre, throwing two turn plough furrows on the seed, and left further preparation until April, when I broke out the remaining land with a turning plough running in every turn plough furrow with the subsoiler to the same depth as before.

Another piece, I prepared in like manner, except that I applied about 350 bushels of stable manure to the acre the first of April. To another piece, with the same preparation, I applied Isaac Reynold's phosphate 250 lbs. to the acre. I cultivated with what is called a Buzzard Wing Sweep, running very shallow, leaving, when done cultivating, the land almost, if not altogether flat. Cotton planted middle of April did well and promised finely until the middle of July, when it began to wilt and burn, *apparently* for want of rain, but not so; for in spite of fine showers it continued to burn and throw off

until almost dead. It was not excessive drouth nor excessive wet that caused it to fail, neither was it rust, or at least it was not like any rust I ever saw. Perhaps it *frenched* as Mr. Booker, of Marengo, Alabama, remarks, at least mine took *French leave*, sure; and nothing was made after the 25th of July. The result, after being gathered, was as follows:

FERTILIZER USED.	YIELD PER ACRE.
Stable Manure	920 pounds.
Cotton Seed	700 "
Phosphate Guano	300 "
Without any Manure	115 "

I have laid off my rolling land with grade ditches, from 1½ to 2 inches fall in 12 feet, horizontalize my rows so as to compel each row to hold and absorb or drink its own water, not intending to allow the water to go running over my land: but as soon as I put Mr. Dickson's theory of flat culture into practice, away goes all the water whirling down to the first ditch, sometimes filling it up, causing it to break over, and on down to the second ditch, filling it worse than the first.

I like the plan of flat culture for several reasons. I approve of horizontal rows in order to hold the water where it falls, and to do both is what I would like to learn.

Mr. Editor, please send me THE RURAL CAROLINIAN the present year. Although I already know more than I can put into practice, yet I get some good ideas from books and papers, and withal your Magazine is very interesting to me. I wish all farmers would take some good agricultural paper; then if they made blunders in business it would not be through the sin of ignorance.

W. E. FREEMAN.

Olustee, Ala., February 18th, 1871.

An Experiment with Small Grain Crops.

Believing that the farmers, as a general thing, use entirely too much seed per acre, in seeding their wheat and oat crop, I concluded to test the matter in the fall of 1869. I prepared, as thoroughly as I could, a small plat of clay land. Applied at the rates of twenty-five bushels cotton seed per acre and ploughed them in, and twenty bushels of leached ashes broadcast, harrowed in. Divided the patch into five plats, each containing the hundreth part of an acre. No. 1, for wheat; No. 2, for White Irish or Surprise Oats; No. 3, Red Rust-proof Oats; No. 4, Ramsdell Norway Oats, and No. 5, Six-rowed Barley. The whole patch was then laid off in rows twelve inches apart, and about two inches deep. I put in the drill Patapsco Guano, at the rate of three hundred pounds per acre on the five plats. The seed wheat was selected from a field of very fine Broughton wheat, only a single handfull. This was soaked in a solution of blue stone twenty-four hours, taken out and partially dried, then rolled in slacked lime. The wheat was dropped one grain in a

place from six to eight inches apart, and left from the single handfull of seed, enough to drill in pretty heavy a row thirty feet long, to prove the merits or demerits of thick or thin seeding, but the birds came near destroying the single row, therefore, that part of the experiment was lost. I would remark here, that the heads on the single row were not as fine as the hilled plat. The different varieties of oats, and the barley, were drilled in lightly, and the whole covered about an inch deep with a hand rake.

The planting was finished the first of December. All came up in two weeks; nearly all the wheat came up. The result proved highly satisfactory. The outside rows of the wheat were considerably damaged by birds, but I cleaned one-half bushel of very superior wheat, weighing thirty-four pounds. Oats, White Irish or Surprise, three pecks; Red Rust-proof, three pecks; Barley, one bushel. The Ramsdell Norway Oats came up badly, and I thought so little of them I never threshed them. The weeds were cut out of the wheat in the spring with the hoe and the top soil stirred lightly. I leave your readers to draw their own conclusions. I have the half bushel of wheat grown on plat No. 1, planted very carefully on one acre and three quarters, this year, and will give you the result if desirable.

Very respectfully, O. A.

Lewisville, Chester Co., S. C., January 16th, 1871.

How to Recover and to Preserve Hill Lands.

Substitute for hill side ditches, rows of logs or of brush on the same level that cotton rows should be run, at proper distances, according to the declivity of the hill, *never to be moved;* and when the logs or brush rot down, supply logs or brush, or encourage the growth of a permanent hedge-row of shrubbery.

If there is a ditch at all, let it be on the *lower* side of the brush-row, to carry off the water after it has filtered through and left your soil, where it ought to be, on the upper side of the brush-row.

Any person of common observation, can see that the slovenly system of hill-side ditching and ploughing, practiced for the last forty years, has ruined this middle country.. Instead of protecting his land against washing rains, the planter has devised, and practiced most persistently, the most summary way of running the best of his estate clean off, out of the reach of himself, his heirs and assigns, forever.

Unless the farmer adopts some more efficient way of keeping his soil in its place, what is the use of his fine spun theories of subsoiling and recuperation, with Liebig and Ville at his fingers end, and his Peruvian, and Etiwan, and Wando, and Stono, etc., etc., out of pocket?

He puts his best land, (the red hills are the most fertile lands in this State,) in beautiful condition to run away from him down the hill into his newly scraped ditches, down to the gullies and branches, with the first heavy rain,

loaded with sixty-five dollars per ton of manipulated fertilizers, to breed noxious weeds in the ditches of his bottom lands, *and all for want of a few pine-tops judiciously placed on his hill-sides.*

A walk through my hilly plantation, ditched with great care many years ago, will satisfy any observer, that the ditches have contributed very much to the ruin of the property, and the consequent bankruptcy of the owner. Much better it would have been every spring, while the land was being prepared for planting, to have put a few brush in the washes to hold the soil, instead of opening a nice way for it to run off. Better still, in the beginning, to have established a regular and permanent system of hill-side brakes or brush-rows, running nearly level, from which a hedge of native shruberry would have sprung, which could be further improved by sticking down cuttings of shrubs of quick and easy growth, along the upper side, and the old plantation would be a fortune now, if the land was good. But what is the fact? On the upper side of every old ditch, is a red streak, five to twenty feet wide, of short gullies running down into the old ditch; or else the old ditch is filled up with the very best soil of the hill, and has made just such a breastwork as might have been made thirty years ago, with a few brush, and saved the land.

When we learn to keep our lands from washing away, *then* let us talk of improving them; and not till *then* can we afford to buy fertilizers at present prices.

Another advantage of these brush fences. They not only hold the soil and keep the ditches below clean, but they hold the moisture in the land above for days after a summer shower, and no damage is done below, by the sudden rush at once of all the water that falls. Without this protection, a hill-side, ploughed shallow, is as dry two hours after a shower if the sun shines, as it was before, and the crop receives no benefit.

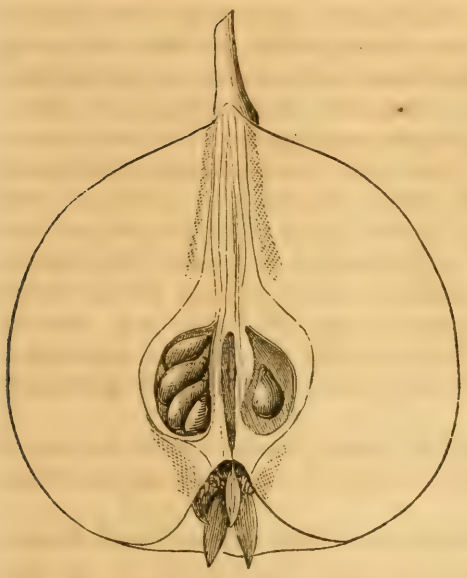
The next best way of preserving the hill lands is, whenever a ditch is made or cleaned out, to draw and bank the dirt on the *upper side*; but that involves constant attention to the ditches. The brush-row above the ditch is the safer, and the better system. It is a permanent improvement in money value of the plantation at small cost. ———————.

———————————

Palm Leaves.—The steamship Crescent City lately took out 50 bales of palmetto leaves from New Orleans to Liverpool, where, at the present gold premium, they bring about 10½ cents per pound. These leaves, which can be had for the mere gathering in the Florida and Louisiana forests, thus command almost the price of low ordinary cotton. If there is any permanent demand for them in Europe, it will be the basis of a very profitable new industry. This first consignment is worth about $1,200, of which at least $1,000 is clear profit. The labor of gathering these leaves could not have occupied a man more than 30 or 40 days.

Department of Horticulture and Rural Art.

A Neglected Fruit—The Quince.



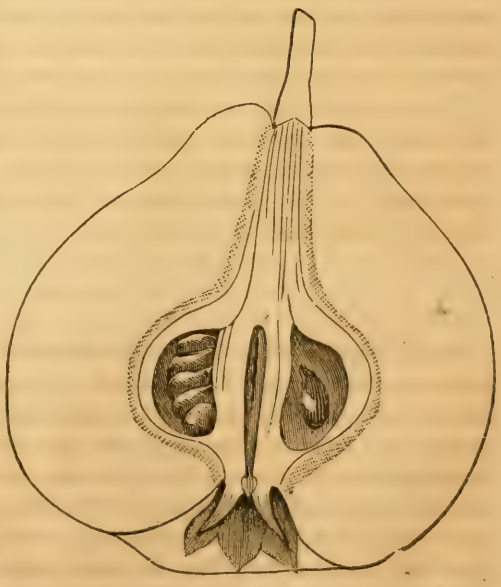
The Apple-shaped or Orange Quince.

No fruit-tree can be more easily grown, none come into bearing sooner, none are less subject to blight or decaying influences, and, so far as we have observed, no fruit crop pays better, acre for acre, one year with another, than the quince. We have repeated records of over eight hundred dollars' worth of fruit being sold from an acre; and one recording two hundred baskets of fruit as having been gathered from an acre of trees only four years planted. This last is certainly a large yield, but the owner gave to the land good, careful cultivation, and has realized full compensation therefor.

The quince can be grown in almost any soil, but succeeds best in deep, rich, moist, strong, or rather heavy land. It can be readily grown from cuttings in the ordinary way of all outdoor hardy plants. The planter will find, however, that the cheapest and best way is to buy good, strong bushy plants about four feet high, as such plants will return, in three years, a crop sufficient to pay all past expenses. Plant them eight or ten feet apart.

In varieties there is a choice, the orange or apple-shaped being generally deemed best.

The flesh of the orange quince, when fully ripe, is of a pale orange yellow, and cooks quite



The Angers Quince

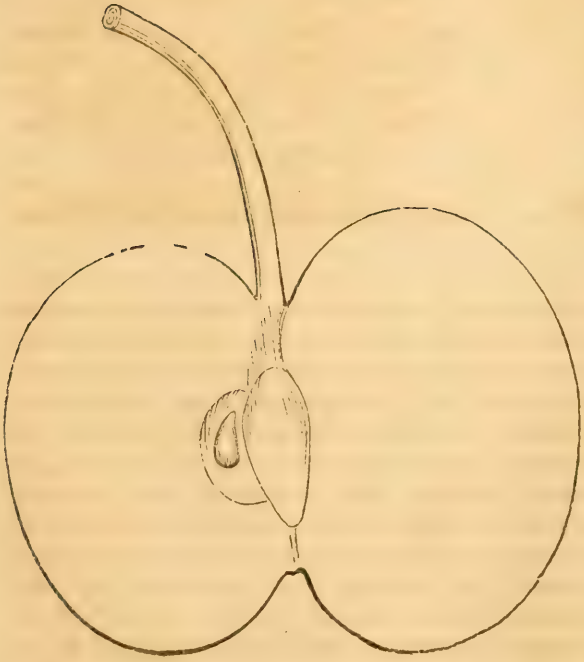
tender. If gathered before ripe, it is rare that the best of housekeepers can make anything but hard preserves from it.

The Portugal is a variety but little grown, we suppose because of two reasons, viz., it matures early before really needed, and produces only moderate crops. It is one of the richest in color of flesh when cooked, becoming a purplish crimson.

The Angers quince, so much used for stocks on which to work the pear, is in point of profitableness for market, in size of fruit and productiveness, fully equal to the Orange, but the flesh is a little harsher and more acid. It, however, cooks quite as tender, and will average larger in size.

F. W. WOODWARD.

Japan Pear.



This is a singular fruit, of no value as a desert sort, but exceedingly valuable as a cooking pear, having very much of a quince-like flavor. It can be kept long into winter, with no more trouble than potatoes; and like long-keeping winter apples, brought forward whenever a dish of fresh stewed pear fruit is desired. For preserving, it is also valuable on account of its highly aromatic character, which can hardly be submerged, even by use of a large amount of sugar.

It originated with Gideon Ross, of Westfield, N. J., from seeds found in the trunk of a nephew who died on his way home from Japan. It bears early and abundantly, and the tree is a strong grower, with broad, nearly heart-shaped, foliage.

Description.—Fruit, medium, roundish oblate; skin, quite rough; color, reddish russet yellow, with large light colored specks; stalk, long and stout; cavity, open, deep; calyx, only marked; basin, open, broad, deep; flesh, coarse, gritty, with consistency much like a quince and somewhat of its aroma; core, with an open centre. October to February.

Training the Tomato.

FIG. 1.

FIG. 2.

There are various opinions in regard to the best way to manage the tomato plant. Some contend that the best way is the easiest and most natural way —that is, to allow it to lie upon and spread over the ground at will, where it will "layer" itself and take root, and thus strengthen and continue its growth and fruitage. There is, at least, a show of reason in this. The tomato is naturally a trailing plant, and the nearer the earth it is kept, the better and longer it will bear. We have often, by covering the vines with earth, where they lay upon the ground, and thus assisting them in their natural tendency to make layers, multiplied and continued our earliest plants through almost the entire season; but the objection to this course, in our hot climate is, that the fruit is much more liable to rot when the plants are left untrained on the ground; in fact, wherever it touches the earth, it is almost sure to decay before it gets fairly ripe. We have partially obviated this difficulty by heavily mulching the ground around the plants, which is a good thing to do, whether they are trained or not.

But we are convinced that, for our climate, we can get more and better fruit by training the vines in some way, so that the bearing shoots shall be kept from the ground. A simple stake, or better, a branching bush or branch of a tree, three or four feet in height, will answer the purpose; but three stakes, and two or three barrel hoops, as shown in Fig. 1; or a trellis, like

that represented in Fig. 2, make a better, as well as a handsomer arrangement. The cuts are from the Catalogue of B. K. Bliss & Son, who recommend these modes of training.

The Cultivation of Celery.

The soil for celery should be rich and light, and worked deep—if eighteen inches so much the better—but an excellent article can be grown on common garden soil one foot deep.

The seed should be sown on a rich, well prepared bed in February. It is difficult to get the seed to germinate after the weather becomes hot and dry The young plants stand considerable frost. Fall and winter grown plants are apt to run to seed during the following summer. If late plants are desired, they may be obtained by densely shading the bed, and keeping it well watered with a watering pot, with a very finely perforated rose. Plants may be successfully raised during any time in summer in an old spent hot-bed or cold frame, by white washing the sash and giving plenty of water. The seed should be covered as lightly as possible. If sown broad-cast on a freshly stirred surface, a good watering will cover them deep enough.

Red and White Solid are the best varieties. Turnip rooted and the giant kinds are coarse and pithy. To have good, strong, stocky plants, is very important; therefore the young plants should be thinned so as not to be drawn up weak and spindling. Drilling the seed in rows six inches apart greatly facilitates proper thinning. The old plan, laid down in the books, of planting in deep trenches and earthing up every few days is troublesome, and not so good as the one I have adopted.

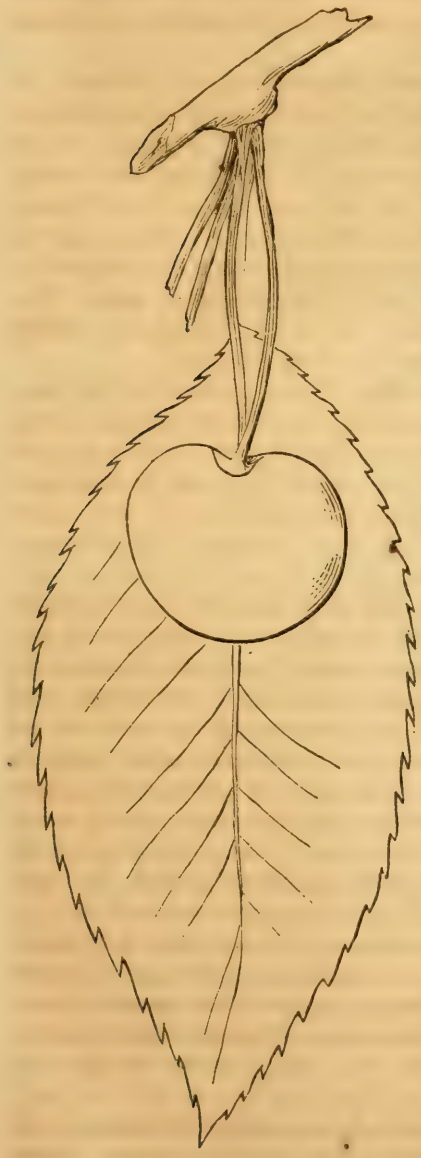
Lay out trenches one foot deep; fill in with good fine, well rotted manure four to six inches; guano and ammoniated phosphate act freely upon this vegetable. Draw in the side, leaving them sloping until the trenches are nearly full; fork dirt and manure well together, and level the surface with a rake, and all is ready for planting. Draw a line through the centre of the row, and set the plants three in a bunch with their roots close together; these bunches should be one foot apart. The object of putting three plants together is to have enough foliage to prevent the dirt from getting to the heart of the plants when earthed up. I have found this a very great advantage; the outside leaves are so numerous as to completely protect the inside tender foot stalks from contact with the dirt, which causes rust and rot.

The banking should be done at two operations in October and November; the last one may in favorable seasons be delayed until December. If it be agreeable to have celery early, the earthing-up may be done sooner; but it is properly a winter vegetable. It also soon decays if banked in hot weather. Its greatest growth takes place in the fall, when the weather becomes cool and the nights are long and dewy.

Sufficient space should be left between the rows, to admit of plenty of dirt for the banking process; at least four feet—six would be better. Before

earthing, draw up all the leaves straight, nicely protecting the heart of the plants; tie a strip of corn shuck around the middle, and one near the top. Be careful not to tie too tightly.

This holds every thing to its proper place while putting up the dirt. Earth up to within three inches of the top of the leaves. After standing two to four weeks, the process may be repeated, and all is done that is necessary to make the best of celery.



It can be kept all winter by being taken up and placed in a shallow ditch on a dry place, where all rain water runs off. Put the bunches perpendicularly as they grow, with dirt between them, not allowing them to be jammed together by the pressure of the loose earth. When all is covered up to within two or three inches of the top, throw a light covering of straw over the ridge, and then cover all over with boards to keep off rain and freezing; but the boards should not rest directly upon the ridge.

In growing celery liberal waterings and an occasional sprinkling of salt, add much to its vigor and healthfulness. Fresh rank manures kill it outright. Select moist weather for transplanting, and if the roots be dipped in a batter of clay, mixed with cow manure, they will live and thrive more readily.

Celery may be kept in the house for weeks, by placing the roots in water in a deep vessel that may be covered to keep out the light.

W. H. THURMOND.

Madison, Ga., February, 1871.

ANOTHER GOOD SWEET CHERRY: KNIGHT'S EARLY BLACK.—For private gardens, this is one of the most desirable varieties, as its fruit matures early and is of the highest excellence. In habit it is short jointed, and makes a tree of only medium size. The fruit is large, black, juicy, half tender, very rich and sweet, and fine flavored.

New Double Flowering Portulaca.

Among the late acquisitions to the flower garden the above holds a prominent place. Yearly we are receiving from Europe so called "novelties," few of which are adapted to our climate, or, if so, are of sufficient merit to hold a permanent place in the estimation of cultivators. The double Portulaca, however, is an exception, having really improved since its first introduction, and become one of the most attractive for summer decoration.

The flowers are perfectly double, and of the most brilliant scarlet, crimson, white, variegated, buff, yellow, orange and rose; and the plant is admirably adapted to withstand the influences of heat and drought, rendering it peculiarly adapted to our hot and dry summers.

The cultivation is very simple; it will grow upon any soil, although, like almost all other flowers, it thrives best on a sandy loam. The soil must be fine; and as the seed is very small, *sown on the surface*, and slightly pressed into the soil. Care must also be taken in watering, not to wash out the seed. The best effect is produced by growing in masses. The plants should be set about one foot apart each way, and require no further care than to keep them clean of weeds.

We are indebted to Mr. H. A. Dreer, Seedsman and Florist, 714 Chestnut street, Philadelphia, for the foregoing cut, with some seed of this elegant flower.

Aromatic Carolina Apple.

This is a summer apple and one of the best on soils that suit it. Fruit, large, oblate, tapering slightly to the eye; color, green striped with dull crimson and covered with a white bloom; stem, short in a deep cavity; calyx, in a wide shallow basin; flesh, juicy and of a fine aromatic flavor; ripens from July 10th to August 1st. The tree is a vigorous grower and very productive.

Horticultural Miscellany.

A CURE FOR BLEEDING VINES.

Mr. S. Mumford, Waynesville, Ga., writes us that he staunched the wounds in a Scuppernong grape vine, from which the sap was escaping almost in streams, by an application of *tea*, as follows:

"I took a quantity of tea—it chanced to be 'Black Tea'—and, pulverizing it nicely, applied about a thimbleful to each orifice, winding narrow strips of cloth five or six times around the vine. I then pressed it smartly, so as to force the tea well into the holes. In about four hours I found every place staunched, and the flow has permanently ceased.

A PLENTY OF CUCUMBERS FROM THREE HILLS.

A correspondent of the *Horticulturist* describes his way of making a Cucumber crop as follows:

"I had a narrow border, not more than two and a half feet wide, on the edge of a high fence. I planted three cucumber hills in the border, and laid some brush, (such as is used for pea vines,) between them and the fence. As soon as they crept up to the brush, I pinched off the ends of the vine, which thickened rapidly around the roots, and in every direction, throwing out the most vigorous foliage and profusion of flowers.

I did not allow the cucumbers to grow, but watched them, and such as I wished to reserve for the table I picked as soon as they became of proper size; all the rest were gathered every day for pickles; every day pinching off the buds at the end of each shoot. In this way the hill continued fresh and productive until they were touched by frost. Some judgment can be formed of the value of this practice when I add that more than a barrel of pickles were made from three hills, besides allowing a supply for the table.

ENLARGING AND KEEPING PANSIES.

I have been quite successful, some one writes, in enlarging the size of Pansy blossoms by watering them twice a week with manure water. They are now larger than when brought from the gardener. I know of another amateur who has much increased their size by watering them with glue water. A piece of glue 4 inches long by 2 in width is sufficient for a bucket of water. Of manure water, I give a pint (strong) to each plant.

Dairy and Stock Department.

Improved Stock for the South.*

Stock-raising has been almost abandoned in South Carolina of late, in consequence of the constant depredations by thieves, who have infested the land; but the time has arrived when an effort should be made to revive this important branch of successful farming, or abandon our farms to the tax-gatherers. The only mode of protection that suggests itself, is to employ stock-minders, individually or coöperatively.

Very many of our farms are located in the uplands, and require constant applications of manure to render them profitable, and, without stock, we shall have to depend almost entirely upon such fertilizers as we may be able to to buy. I have faith in Peruvian Guano, but also believe that our farm products can be very largely increased by the liberal use of domestic manures.

Dr. Robertson, in his survey of Perthshire, Scotland, in speaking of the value of sheep to the farm, says, "they enrich the quality and enlarge the quantity of grass within walk, more than any other species of animals. They never deteriorate the soil; they render it more and more productive; and wherever their numbers are increased upon a certain extent of land, they help to support that increase of numbers by producing an increase of food. The ground is not only made green, and the heath extirpated by the enriching quality of their manure, but the finest grass springs up spontaneously where it had formerly been scanty and coarse."

Some of the richest counties in England owe their fertility to sheep husbandry. One thousand sheep, penned on an acre a single night, is said to be equivalent to a heavy application of guano. I have seen, in this district, seventy-five bushels of corn made on an acre of upland from the application of stable manure. The valuable manure obtained from the cow and hog pens, is probably remembered by all the *older* members of the club.

In discussing the advantages of stock-raising to the farm, I must not omit to mention, that it is within our power to produce our entire supplies of bacon, beef and mutton at a much less cost than we now pay for these necessaries, by raising more grain and less cotton.

* An Essay, read before the Pomological and Farmers' Club, of Society Hill, by J. J. Lucas.

Cincinnati regulates the price of bacon as entirely as Liverpool does the price of cotton, and we must pay whatever Cincinnati asks, or produce our own bacon.

The advantages of stock-raising are so manifest, that I will now proceed to notice the beneficial results to be derived from the introduction of improved breeds of cows, sheep and hogs. In our impoverished condition, it would be too expensive for us to attempt the importation of improved stock in large numbers; I shall, therefore, advocate the purchase of male animals, to be crossed upon such stock as we may possess, or can obtain near at hand.

Youatt, in his treatise upon cattle, says, the grand secret of breeding is to suit the breed to the soil and climate. The common stock of the country is acclimatized, and to improve this stock by the judicious crossing of breeds known to thrive on soils similar to our own, should merit the earnest attention of our club.

Darwin, in his "Animals and Plants under domestication," quotes Mr. Coate, a successful breeder, as saying crosses answer well for profit to the farmer, as you get more constitution and quicker growth; but for me who sell a great number of pigs for breeding purposes, I find it will not do, as it requires many years to get anything like purity of blood again.

The same principle will apply to sheep and cattle. The best fat ox at the great show at Islington in 1862, was a grade animal.

Mr. Spooner, a distinguished authority, says, crossing district breeds certainly improves cattle for the butcher. Lord Somerville, a former celebrated breeder, states that his half-breeds from Rylands and Spanish sheep were larger animals than either the pure Rylands or pure Spanish sheep, and I may add that such has been my own experience with the Spanish Merino and native sheep.

The famous improved Kentucky sheep were obtained by crossing the Merino on the native sheep, with subsequent crossings of the Bakewell, Southdown, Cotswold and Oxfordshire. Mr. Robt. W. Scott, the breeder of these sheep, claims to have confined the good qualities of them all in his improved Kentucky.

It may not be amiss to say a word in condemnation of the too common practice of interbreeding. No farmer should ever permit a male animal to have increase from his own progeny Some remarkable cases resulting from interbreeding are given by Darwin, one of which will suffice to sustain my position. Mr. J. Wright, well known as a breeder, crossed the same boar with the daughter, grand-daughter, and so on for seven generations. The result was that in many instances the offspring failed to breed; in others they produced few that lived: and of the latter many were idiotic, too stupid even to suck, and when attempting to move, could not walk straight. Interbreeding generally produces loss of size, constitutional vigor and fertility, frequently accompanied by malformation. Mr. Jonas Webb one of the most prominent of modern breeders, kept five families of sheep, to counteract the evils of close interbreeding.

I am of the opinion that the following crosses on our native stock, are desirable for our soil and climate; for cattle, the Devon; for sheep, the Spanish Merino; and for hogs, the Essex.

DEVON CATTLE.

The Devon does better on our scanty pasturage than any of the improved breeds, and is tractable and intelligent as a work animal. When crossed with other breeds, the Devon always ensures a rapid improvement, imparting its rich red color, and other characteristics in an eminent degree.

A grade cow belonging to a member of this club, gave a yield of sixteen quarts milk per day, on a poor pasture.

The beef of this breed is scarcely to be surpassed in flavor and quality, the flesh being beautifully marbled or interspersed with fat and lean. For work, for milk or for beef, the Devon is worthy of our attention.

MERINO SHEEP.

Mr. Richard Peters, of Atlanta, Ga., one of the most distinguished stock-raisers in the South, has, after testing the most celebrated English breeds, abandoned them all for the Spanish Merino. Mr. Dennis Johnson, of Calhoun, Ga., says, he has been engaged in raising sheep for nearly twenty years, and has had experience with the Southdowns, Leicesters, Cotswolds, New Oxfordshires and Spanish Merinoes. All except the Merinoes were failures, proving neither healthy or profitable, notwithstanding the great care bestowed upon them. He crossed the Merino buck on the common sheep of the country, with marked success, the offspring being large, healthy, strong and very prolific. The Merino possesses greater longevity than any other breed known, both sexes frequently being productive to twenty years of age. Nearly all of the long wooled varieties shed their wool before shearing time, while the Merino retains his fleece for two or more years without loss. The mutton is fully equal if not superior to most other varieties. Lord Somerville, claims it as a rule, that the grain of the flesh is always in proportion to the fineness of the wool, the mutton of the short and fine wooled sheep being closer and more highly flavored than the long-wooled. Mr. Kendall says, the chief difficulty with his flock of Merinos was to find wethers *poor* enough to kill. [See frontispiece, for a fine group of Merino (Infantado) ewes.]

ESSEX HOGS.

This superior breed of hogs owes many of its excellent qualities to repeated crosses with the Neapolitan race by Lord Western, and to subsequent crosses with the Berkshire, which has been improved also by crosses with the Neapolitan. The Essex is thrifty and fattens readily at any age. The color is usually black, which is a decided advantage in our warm climate, not being so liable to mange and other cutaneous diseases as the white breeds. Mr. Darwin says, there is a strong prejudice in Devonshire, England, against white pigs, as they are believed to blister when exposed to the sun. The same prejudice exists in the South. Mr. Dennis Johnson, of Calhoun, Ga., in an article on "Essex hogs and their crosses," in *The Southern Cultivator*, gives a curious example of a listed hog fifteen months old, with one white and one

black ear. The white ear has seldom been free from mange, while the black one has never been affected by it. Mr. Johnson says, the average weight of his half-breed Essex hogs, before the late war, (for Southern Independence,) was from two hundred to three hundred pounds net, at eighteen months old.

In conclusion, I would earnestly recommend a constant infusion of new blood, by purchase or exchange, at District and State Fairs, of the best male animal, of the variety you intend to breed from.

Department of Natural History.

Specimens of insects, securely packed, (according to instructions given in our October number,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. CHARLES R. DODGE, Department of Agriculture, Washington, D. C.

The Orange Scale Insect.

This insect is a source of great annoyance to those interested in orange culture, at one time almost affecting the destruction of the entire orange groves of Florida, and we, therefore, think a few remarks on its natural history, habits, etc., will not be out of place.

It is not a new thing, for nearly twenty years ago Professor Glover thoroughly investigated its habits, and gave them to the public, together, with the results of his experiments, made upon different varieties of the tree, in various parts of the State. The scale, or coccus, as it is seen on the tree, when examined through a magnifying glass, presents the appearance of a tiny half shell, very long and narrow, sometimes curved, pressed close down upon the bark. This is the case that protects the female scale insect, and measures about one-fifteenth of an inch in length, by one-fiftieth broad. The insect itself is soft and fleshy, varying in color from yellowish to pink, most probably according to age, and is provided with a sucking tube, by means of which it subsists upon the sap of the plant which nourishes it.

The eggs are deposited within the shell to the number of twenty or thirty, and, hatching in a few days, the young insects leave the maternal shell and wander about, finally to fix themselves upon some tender part of the tree, there to remain. In this stage they resemble very small mites, having *six* legs, though the true mites have *eight*. Now is the best time to destroy them, as they are soft, and unprotected by the shell covering, and have not fixed for life.

The mature male is altogether a different personage from the inactive female, that never changes her position after having once *fixed*, being very much smaller, and having wings, legs and antennæ like any other insect—though it too is a "scale" in the earlier stages of its existence. According to

Glover, the scale of the male is much broader than the female, and the insect, after sucking the juice of the plant for a few weeks, changes to the pupa, and, finally, emerges a perfect fly. The sexes then pair, the male dies, the female deposits her eggs, becomes smaller, and gradually dries up. The young generally commence hatching in May, and continue to reproduce through the season, till cool weather. It is held that sickly or unhealthy trees are more liable to the attacks of these insects than sound and healthy ones, and, therefore, careful cultivation, to insure a vigorous growth, is of the first importance in checking its ravages. Many remedies have been tried, but none seem to succeed as well as "Peruvian guano mixed with soapsuds. This mixture seemed to have the desired effect when applied by means of a syringe about once a week, the soap and ammonia killing the young coccus as it first emerges from the female scale, and before it has become impermeable to the liquid preparation." The guano will also serve to enrich the soil under the tree.

In planting new trees, great care should be taken that they be entirely free from "scales," as a whole grove may become infected from one diseased tree. The coccus has a few insect enemies, which, in a measure, serve to check its ravages.

For the Tobacco Sphinx.

In the last number of The Rural Carolinian reference was made to a method of destroying the perfect insect of the tobacco worm, by poisoning the flowers of the Jamestown weed. A more definite statement may be desirable. A pint of water and a gill of molasses or honey is put into a bottle, to which is added one ounce of fly cobalt; a quill is passed through the cork and the mixture is ready. A few drops in each flower is sufficient. Sugar will answer every purpose, as the mixture is simply sweetened water, poisoned. This remedy has been used very successfully.

Answers to Correspondents.

Squash Vine Borer.—Hampstead. We can give you *no good* remedy against this most destructive insect, which thus far seems to baffle all attempts of agriculturists and others, at finding a remedy against its attacks. Many remedies have been suggested, such as placing ashes around the stems of the plants; sawdust saturated with kerosene or coal oil, sprinkled around the plants, at the season when the females are depositing their eggs. Paper wrapped around the main stem, a few inches above and below the ground, has been recommended. The surest remedy however, is to examine the vines closely, and where a plant is observed to droop in the least, to cut out the worm before it has entirely killed it. The natural history of the insect is as follows:

The egg is deposited on the vine near the roots in June and July. [Earlier here.—Ed.]

The larva when hatched enters the stem, and after devouring the interior enters the ground and forms its cocoon, which is composed of particles of earth fastened together by a gummy substance. The next summer the perfect insect emerges, a winged insect, having an orange colored body, black-spotted; its hind legs densely clothed with orange and black hairs. The hind wings are transparent. The insect expands one inch and a half.

The main thing is to prevent the female from depositing her eggs, and anything that will accomplish this end, will prove the successful remedy. In an article on page 563, Vol. 1 of THE RURAL CAROLINIAN, this subject is effectively handled, and the difficulty of exterminating these insects fully shown.

GRAPE VINE LEAF ROLLER.—B. M. E. The only "practical remedy" we can give for the grape-vine plume, *Pterophorus periscelidactylus*, when it becomes very troublesome, is hand picking. If as troublesome this season as the last, please favor us with specimens.

SAWDUST FOR CUT WORMS.—H. Although we have never heard of this remedy having been used, it is possible that "fresh pine sawdust" *might* prove available, as long as the resinous or pitchy principle remained. There can be no harm in it, unless it should harbor other insects. It is worth a trial.

ORANGE INSECTS.—J. M. B., Fort Mason, Fla. The minute insects entirely covering the twig you enclosed in your letter, are the "scales" of the orange scale insect. See article on the subject in the present number.

Esparto Grass—What is it?

In the March number of THE RURAL CAROLINIAN, just issued, Prof. Hilgard corrects the name of *Stipa tenacissima*, which you give this grass, and says: "the Esparto is not a true grass at all, but is the *Juncus tenacissimus* of botanists."

I think Prof. Hilgard is in error here; and as there seems to be some confusion in the nomenclature of the plant, the object of this note is to endeavor to clear it up.

In the Report of the Commissioner of Agriculture for 1868, (p. 260,) is an article on the Esparto Grass, and a long letter from U. S. Consul, J. W. McChesney, at Newcastle-upon-Tyne, England, to the Commissioner, on the subject. He states having consulted Dr. Hooker, Director of Kew Gardens, and Mr. Oliver, Keeper of the Royal Herbarium, as to its introduction into this country, both of whom recommend it.

These botanists speak of *two distinct species of grass* under the name of Esparto; viz: *Macrochloa tenacissima*, which grows in tufts, and *Lygeum spartum*, which has a creeping underground root, (*Rhizoma*,) like our Bermuda or joint grass. These grasses are known in Spain as *Atocha*, and in Algiers as *Alfa*. They seem to be used indiscriminately, both being valuable for their textile fibre, and pass under the same common name of Esparto.

Now both of these are true Grasses, although belonging to different genera; and are far enough removed from the genus *Juncus*, which includes the sedges and bulrushes.

In the article in Commissioner's Report, mention is made of the fact "that New Mexico produces a plant, the fibre of which appears to be similar to

that of the Spanish Esparto," under the name of *Stipa tenacissima*, found by Charles Wright, of the Mexican Boundary Commission, in 1851. It is not asserted that the New Mexican and Spanish plants are identical, but only that "the fibre is similar." The New Mexican plant is *Stipa tenacissima*, but the Spanish plant is nowhere so called, nor have I been able to find, in any allusion to the Esparto, that it was allied to the bulrushes.

You sent me a small package of seeds, some time since, labelled "*Esparto Grass—Stipa tenacissima*," which, I presume, is a portion of that to which allusion is made in the January number of THE RURAL CAROLINIAN, as received from Prof. Jouanne, of Algiers. The seeds themselves are all false, and contain no grains, (only the chaff or floral envelopes,) but they certainly belong to some *Grass*, and not to a *Juncus*. As far as their characters can be seen, they come near to *Stipa*, but it is impossible to decide upon such meagre specimens. The seeds of *Juncus* are very minute and numerous, and contained in a three-valved capsule; the grass seeds are single grains, covered only by the glumes or chaff.

From the present information we have of the Esparto Grass, I infer that there are two distinct species so called, growing along the Mediterranean, both of which are collected and used for their textile products; one, the *Macrochloa tenacissima*, taller and growing in tufts; the other *Lygeum spartum*, with underground stems (*rhizomatous*); and that neither are readily propagated by seeds, but more easily by portions of the root; and that the *Stipa tenacissima* of New Mexico is not a true Esparto, but only having "a similar fibre."

Aiken, S. C. H. W. RAVENEL.

SCHUROSTOMA SYNGAMUS.—Will some one, who knows, give a description of the little red worm, the unconscious owner of the above big name, that causes the gapes in young chickens. Please give its natural history, and the best method of preventing its attacks. Also, how to exclude it, if possible, from poultry ranges. B. W. J.

PRESERVING EGGS.—The French *Journal de Pharmacie* contains an account of various experiments made in France on the best method of preserving eggs—a subject of much importance there. Among the different processes, the best, and at the same time one of the simplest, was found to consist in rubbing some vegetable oil (linseed especially) on the egg, this preventing any alteration for a sufficient time, and proving to be much more satisfactory than any other plan hitherto recommended.

The Department of Agriculture is about to publish a magnificently illustrated work on entomology, comprising coleopterous, *grass*hopterous, and all other kinds of insects.

The *Eucalyptus*, or Australian Gum Tree, is now extensively planted in California. They are of immense value for their timber, the medicinal properties of their bark and resin, and the essential oil of their leaves.

THE RURAL CAROLINIAN.

VOL. II.] CHARLESTON, S. C., APRIL, 1871. No. VII.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

INQUIRIES AND ANSWERS.

We are glad to observe the interest awakened among our readers through our "Department of Correspondence and Inquiry." We consider this feature an important one, and desire to make it a particularly accurate and trustworthy source of information; but in order to do this, we must have the assistance of our contributors and correspondents in all parts of the country, and each must tell us only what he actually *knows*—must give us the results of experience—*facts* not *theories*. We are glad to have our readers send us any *reasonable* inquiries on all subjects connected with farming, gardening, stock-raising, the mechanic arts, natural history, and so forth; but we wish them to be equally ready to answer inquiries where their information may enable them to answer correctly.

Editors are popularly supposed to "know everything." We are not disposed to unsettle anybody's faith in this respect; but it is not reasonable to expect us to tell everything we know in one number, or in one volume of a magazine. Be reasonable, then, and do not ask too many questions at one time.

Seriously, correspondents sometimes ask and expect too much. "Please inform me," one writes, "which is the best commercial fertilizer?" He might as reasonably ask us to tell him what is the best medicine, without even naming the disease for which it is to be prescribed. In the first place, we have not tested, in any way, one in the hundred of the fertilizers in market; and, secondly, if we had tried them all, and ascertained which is best for our land, or for a particular crop, the information might only mislead the inquirer, whose soil and crops might be different. "Who makes the best ploughs?" another asks. We could as readily tell him what hatter or tailor to patronize. We strive to give trustworthy information in regard to fertilizers and implements, and to enlighten our readers in regard to the general principles which are involved in their use. It would be foolish, and worse than useless for us to attempt to advise anybody what particular ones to purchase, without knowing all the circumstances of the case, (which it is impossible for us to know,) such as the locality and soil, previous manuring, kind of crops and cultivation, the skill and knowledge of the farmer, the character of his labor, and a hundred other things.

When a correspondent asks "will such and such an application produce good results on my soil?" if he describe the soil and other conditions accurately, we may be able to give him a useful hint on the subject, but most frequently, we can only answer in general terms, and advise him to *try it*. This may not be very satisfactory information, but it is sound advice; and where our recommendation may be more definite, we should be sorry to have our readers follow it blindly, without using their own brains at all in the matter. Yes, *try it*. The time may come when agriculture will be reduced to an exact science, and every problem in it be found susceptible of being worked out on a slate; but for the present, and for generations to come, we fear, we must be content to learn many things *in the field* by the application of the rule of *try it;* and each one must try for himself, for his neighbor's solution may not be an answer to him. With one farmer, a certain fertilizer or implement may work favorably, and pay a large profit on the investment; with another, whose soil is similar, but whose skill is not so great, and whose management

is different, it may prove a total loss. One makes two bales of cotton per acre, another on equally good land, makes half a bale. The latter may have been advised to apply three hundred pounds per acre of a certain fertilizer. The crab grass gets the benefit of the manure, and the planter, perhaps, curses both the seller of the article and the friend who advised him to use it. It takes brain and muscle as well as manures and implements to make a crop.

Send us inquiries, by all means, but do not expect impossible answers. Tell us what you have done and how you did it, but do not infer that everybody else can do the same thing, whan all the conditions under which he works may be different. We desire to get and to give all the practical information possible. Our readers must make use of it, each in his own way. Farmers must not only read, but they must *think.*

THE NISHWITZ HARROW.

Where land is prepared for the use of improved implements, there can be no question as to the economy of using them. Few of them, that I have used, have given more satisfaction than the above named harrow. It is a new instrument, and is well calculated to be very valuable on rice lands, or wherever the land is freed from stones, stumps or roots. It is V shaped; can be opened to six feet, or closed to three; each tooth is a saucer shaped revolving wheel about the size of a gin-saw with its concave side working inwardly. (I think it would be an improvement to turn one set outwards.) These wheels being of steel, just heavy enough not to break, are sharp enough on their edge to cut through the hardest clod, and leave the land in beautiful condition. They will not cut through cotton or corn stalks, nor does the harrow work well in very grassy land, but in clean land its work is unexceptionable.

I sowed some oats this spring on light cotton land. One furrow each side of the row of stalks with a twister, and a scooter furrow under the stalks was all the "flushing" the land received. The oats were sown and the Nishwitz followed the same direction the ploughs ran. The land looks as if thoroughly ploughed and dragged; the oats are up beautifully, and in this way six mules put in eight acres per day, four did the ploughing and two drew the harrow. The driver of the harrow rode in a comfortable spring seat on the implement all day. If this is not labor-saving, I would like to be taught the meaning of the word.

While I like this harrow, and think it a very desirable tool, I would by no means advise every planter to buy one, simply because a vast proportion of our farmers and planters are Ephraimites. Indeed many of them would as soon think of sending to mill on a Nishwitz as to use it for pulverizing clods. D. W. A.

RAMIE vs. COTTON.

We have already mentioned the organization of a Company in New Orleans, for the cultivation of Ramie and the preparation of its fibre. We learn, with pleasure, that the services of our correspondent, Mr. F. W. Johnstone, (formerly of South Carolina,) have been secured for the new enterprise, which, we trust, is destined to settle the question of Ramie growing in a satisfactory way. We also learn, from a late number of *La Renaissance Louisianaise*, that another Company, under the name of *Société Franco-Louisianaise pour la Culture du Ramié par Actions*, has been organized under the auspices of M. Emile Lefranc, inventor of the new Ramie machine. Is cotton king? or is Ramie about to ascend the vacant throne? We shall see.

DEPARTMENT SEEDS.

We are greatly indebted to Hon. Horace Capron, Commissioner of Agriculture, for packages of valuable seeds, many of them novelties of great promise. We shall take great pleasure in carefully testing them in our climate; but we beg to suggest to the Department the importance of making the distribution of seeds in the South earlier in the season. The planting time for many species is already past before the seeds come to hand. The first of January is not too soon to distribute seeds here.

EGYPTIAN COTTON SEED.

We have received from the Department of Agriculture, Washington, a small quantity

of *Tumel Maki* Cotton Seed, an Egyptian variety, which it is thought desirable to test here. It is a black seed. We shall put it into careful hands for trial, in different parts of the State, and beg those who may receive it to report, either directly to the Department of Agriculture or through THE RURAL CAROLINIAN.

HORTICULTURAL EXHIBITION.

The Cotton States' Mechanics and Agricultural Fair Association will hold their second Annual Horticultural Exhibition, at the Augusta Fair Grounds, on Wednesday and Thursday, May 10th and 11th, 1871. It will, we are sure, be a well conducted and creditable exhibition. Persons desiring to become exhibitors may address E. H. Gray, Secretary, Augusta, Ga., for particulars.

Our friend, A. S. Fuller, of Woodside Garden, Ridgewood, N. J., has sent us some Currant plants, of several varieties, and a few Arnold Raspberries, all of which we will give a fair trial, under our hot sun, (partially shaded,) with some hope of succes. Many thanks.

We are indebted to Edward J. Evans & Co., Nurserymen and Seedsmen, York, Pa., for several very acceptable novelties, among which are the Trophy Tomato, Current Tomato, Latakia Tobacco, Bradford Water Melon, New Joint Pearl, or Pop Corn, Large York Sweet Corn, and *Scolime.*

Bliss & Son, 41 Park Row, New York, the well known, enterprising and trustworthy seedsmen, will please accept our thanks for a fine collection of flower seeds, which we shall take pleasure in testing in our sunny climate.

Henderson & Flemming, 67 Nassau street, New York; H. A. Dreer, 714 Chestnut street, Philadelphia; Phelps & Reynolds, Rochester, New York, and others, will please accept our thanks for very acceptable packages of seeds.

Messrs. Elwanger & Barry, Rochester, New York, whose reputation as Nurserymen is world-wide, have laid us under obligation by a very fine collection of green-house and bedding plants.

FARM AND GARDEN NOTES.

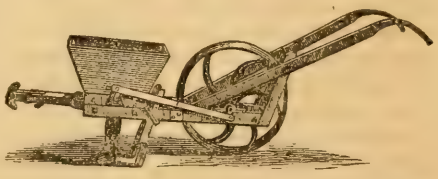
Cotton in Hills.

It is difficult to break up the old routine in cotton planting, but we are satisfied that there is no branch of agriculture in which there is greater room for improvement. Whether planting cotton in hills comes under the head of improved methods or not, experience has, perhaps, been too limited to determine; but certainly the plan is worthy of a more extensive trial than it has yet had. We are told that a planter in Mississippi checked off an acre for cotton three and a half feet each way, thinning to two plants in the hill, and cultivating like corn. The yield, it is stated, was double that grown in the old way. We do not vouch for this statement, but we hope many of our readers will try planting in hills (on an experimental plot) and report results.

The Screw Bean.

We are indebted to Mr. Chas. R. Dodge, of the Department of Agriculture, for some seeds of this curious plant—*Strombocarpa pubescens.* They were collected by the explorer of the Department in Arizona Territory, where the pods are used by the Indians as food. It is grown as a hedge plant in Utah, and it is thought will succeed admirably in the South for that purpose, besides being very ornamental. It is a compact fast grower, and is covered with flowers the whole season.

Southern Corn and Cotton Planter.



Our attention has lately been called to Tunnard's patent improved Southern Corn and Cotton Planter, and though it is too late to be of much service to our readers this season, we cannot refrain from making mention of it as remarkable for its simplicity as well as for its most ingenious adaptation to the work for which it is designed. It opens a drill, plants, covers and rolls at one operation, and it is said that one hand with a single mule can plant with it from eight to ten acres per day.

C. Graveley, 52 East Bay street, Charleston, is agent for it.

Stir the Soil Often.

This injunction cannot be too frequently repeated. It is important in all soils, but most so in those which are somewhat tenacious. During seasons of drouth, and especially in our hot climate, where rains are less frequent than in many other portions of the country, vegetation is largely supplied with moisture by means of our heavy dews. If the soil be hard and compact—crusted over as some soils frequently are—the dew deposited on the surface is evaporated before penetrating to the roots, but if rendered porous by working, both air and moisture reach the roots, conveying to them fertilizing elements.

How Labor can be Economized.

On John T. Alexander's great farm in Illinois, only one hundred men are employed, which is one man to two hundred and seventy acres. It is true it is to a large extent a stock farm, 3,000 cattle being kept on it, but, one-fourth of the whole is cultivated in corn and other grain. The secret lies in the fact, that improved implements and machinery are made to do the larger portion of the work elsewhere done by means of human muscle alone.

Silver Beet or Swiss Chard.

We desire to recommend again this little-known vegetable. Tastes differ, and all may not like it so well as we do. We prefer its leaves to spinach and the stems and midribs of the leaves, always white, tender and sweet, are excellent boiled and served with butter in the way of asparagus; and though they are not equal to asparagus, nor much like it—more like snap beans—they are by no means to be despised. We are having, and shall have, a supply all the spring from last autumn's planting. Another sowing made towards the last of February will come in before the other is gone. We have on trial what was sent us as Sea Kale Beet, which we presume is similar to Swiss Chard.

Deep Ploughing in England.

What will our surface-scratchers say to such a statement as this, which we find in the *Country Gentleman*, from the pen of Prof. Geo. H. Cook, of the New Jersey State Agricultural College? "Last year Mr. Campbell, of Buscot Park, near Farmington, England, cultivated a beet field of 1,700 acres, breaking up the land with one of Fowler & Co.'s Steam Cultivators to the depth of *three feet.*" That is, perhaps, "running it into the ground" in more senses than one, but he got a crop that would astonish our slow-going farmers.

Radishes and Lettuce.

This season's experience confirms that of last spring, in regard to varieties of the Radish and Lettuce. French Breakfast Radish is, all things considered, the finest we are acquainted with—quick growing, tender, crisp and fine flavored; but Early White Olive-shaped and Convent Garden, (a long scarlet variety,) are good. Of many varieties of Lettuce on trial, Boston Curled stands at the head of the list for an early crop, and it is good for later sowings also. It makes no solid heads, but is crisp and tender, Early Simpson is not far behind it. Felton's Indian Head makes fine heads, and is of excellent quality, but Perpignan is surer to head, as the weather gets hot, later in the season.

Steam Plough Companies.

There are a number of companies in England which have bought steam ploughs and cultivators for the purpose of hiring them out to farmers, and are doing a good business, profitable to both the farmers and the companies.

Rice Growing.

Some one makes the following note on *rice:* "Few crops more easy; can be raised on any soil that can be made, either wet or rich. Usual yield, from thirty to sixty bushels to the acre. Easy crop for poor man, lazy man, any man."

LITERARY NOTES AND NOTICES.

Appletons' Journal, for March 18th, gives us the first instalment of a new novel entitled "Morton House," by Christian Reid, author of "Valerie Aylmer," which has recently attained so marked a success. "Morton House" is a Southern novel, the scene of which is South Carolina, and the time thirty years ago. It opens with great spirit, and promises to excel in interest and dramatic

power the first novel by the gifted author. We are more and more pleased with *Appletons' Journal.* It is, without qualification, the best literary and scientific weekly publication in America. (D. Appleton & Co., New York; $4 a year.)

—— *The Herald of Health* always brings glad tidings to both sick and well, telling the former how to get well, and the latter how to keep so; besides, every new subscriber gets, in addition to the magazine, a book on physical culture, entitled "Physical Perfection, or Hints toward Human Beauty." (Monthly, $2 a year. Wood & Holbrook, 15 Laight street, New York.)

—— "Christian Reid" is the *nomme de plume* of a lady of North Carolina, who, we are safe in saying, is destined to obtain very high rank among American novelists.

—— Mr. Theodore Tilton, formerly of the *Independent*, has commenced the publication of a weekly "Journal of Free Discussion," under the name of *The Golden Age.* We do not see the fitness of the title, but "What's in a name?" Mr. Tilton is a *radical*, in everything, we believe, but knows how to make a good paper. (No. 9 Spruce street, New York; $3 a year.)

—— *The Southern Field and Factory* is another new worker in the industrial domain of the South, and, judging by the numbers we have received, a very efficient one. E. G. Wall is editor, and Wall and Rafter publishers. (Jackson, Miss.; terms $2 per annum.)

—— The latest literary venture in our city is *The Garland*, a miniature weekly paper; James C. Withers, editor and proprietor. $1 a year. It has room to grow.

CATALOGUES.

"Briggs & Bros. Illustrated Catalogue of Flower and Vegetable Seeds for 1871," is one of the most beautifully embellished, as well as one of the most extensive and complete issued this year. Address Briggs & Bros., Rochester, New York, enclosing 25 cents.

—— Those well known and trustworthy seedsmen, R. H. Allen & Co., 189 Water street, New York, send out a very attractive "Retail-Priced Catalogue of Garden and Field Seeds." Address as above.

——"Illustrated Catalogue and Price List of Pennsylvania Agricultural Works." A. B. Farquhar, proprietor, York, Pa. A very full list of implements and machinery for farming purposes. Sent on application.

—— For a magnificent collection of standard greenhouse and bedding plants, and novelties, see P. J. Berckmans' Spring Catalogue for 1871; sent on application. Address Augusta, Ga. Mr. Berckmans needs no recommendation to our readers.

—— "Catalogue of Fresh and Genuine Garden Seeds for 1871," Edward J. Evans & Co., York, Pa. Good, trustworthy and prompt seedsmen. Catalogue sent free.

MERE MENTION.

The next meeting of the American Pomological Society, will be held in Richmond, Virginia, on September 6th, 7th and 8th, 1871. We hope it will not lack the coöperation of fruit growers everywhere to make it what it should be.

——The air treatment of wines is now an established practice in Germany; so much so that no must not air treated is allowed to go into the cask. It saves two years in the period of complete production.

——It is stated that in Egypt cotton-seed meal is so highly valued for the production of oil and of cake for feeding cattle, that it bears a higher price than wheat.

——The Wild Goose Plum is very popular in the market of Memphis, Nashville and New Orleans, where, we are told, it often brings ten dollars per bushel.

——Ramie fibre is now used extensively for shoemaker's thread, and to mix with lisle thread articles, and has lately been sold for as high a price as three hundred and fifty dollars per ton.

——A rival of coffee has appeared in the seeds of the *Paullinia sorbillis*, a native of the Amazon region, South America.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

THE ANGORA GOAT AGAIN.

Editor of The Rural Carolinian:

I noticed an article on the Angora Goat, in your Journal of March, by Mr. Henry W. Parr. I must confess that I was astonished at the account of the inexperienced gentleman, and beg to correct him.

He says, "Angora Goats' fleece cannot be spun on the common spinning-wheel; that it is no use to talk about a zig-zag fence keeping them inclosed; that it is the fur-like coating that is so valuable," etc. Either Mr. Parr must have some motive for giving such an imperfect report, or he must have had, in all his lifetime extraordinary luck, and must be ignorant of the docile and affectionate habits of the Angora Goat in general, (I hope the latter is the case,) otherwise he would have strongly recommended the Angora Goat to the South. I believe that the only obstacle in the way of raising them by millions in America, is the high cost. Angora being about 6,000 miles distant from America, and as these Goats sell at good prices in Asia Minor, they cannot be imported and sold very cheap in this country. In the Western States they have raised a great many.

I have several flocks of pure bred Angora Goats about Angora, and as they are generally very tame, we, in Asia, give 1,000 to 2,000 Goats in a flock to the charge of one shepherd, and that one man controls such a large flock alone, being assisted only by two or three sheep dogs. I have also brought over a large flock of these Goats, and keep them here on a farm with a zig-zag fence of six rails, and never did the flock pass over them.

As for spinning their fleece, at Angora, there are no other machines, as there are in England and America, except common spinning-wheels, and the fleece of Angora Goats is spun and manufactured into that celebrated "Angora Shallies," which sell at 40 and 50 piastres per arshin, (at $2 and $2 50 for 27 inches.) Angora and its suburbs produce a crop of 35,000 bales of Goats' fleece or mohair, (200 lbs. to the bale,) not the fur-like coating but the fleece, which is always in demand in England, and sells at 4 shillings, ($1 15,) and upwards per lb., long before it is sheared, if desired. Pelts of Angora Goats sell in New York at $15 to $30 each, which they cut in widths of one inch, and manufacture most beautiful fringes and tassels.

As for barking trees, do not other stock bark trees; and is it a general rule to keep stock in orchards? About Angora there are more than 1,000,000 Goats, and there they have the most beautiful apples, pears, grapes, and all sorts of fruit. As the Hon. J. S. Diehl, of Philadelphia, late U. S. Consul at Java, and U. S. Commissioner to Asia, has been to Angora in 1867, and remained at my country seat, as a guest for some days, he may tell you, if he has seen one tree barked by Goats, where I have hundreds of fruit trees and acres of vineyards. Certainly not, for I never kept my flocks in them.

Mr. Parr seeing my advertisement in your Journal, selling off my stock, may ask why I sell them off, and desire to return to my country, if they are so remunerative? I will explain it.

Since 1868 thousands of Angora Goats have been sent to the Cape of Good Hope, South Africa, where they sell readily, as soon as they arrive, at $100 to $500 each. This colony had not one Angora Goat before 1868, and now exports to England above five hundred thousand pounds Angora Goats' fleece or mohair; seeing that, I came over to America to do the same thing, and establish the general breeding of these valuable Goats in this great country, particularly in the Southern States, as their keeping there would cost not a single cent; they being able to go to pasture summer and winter. But now I understand that it would require some years to make the Southern farmers comprehend the value of Angora Goats, which is already understood at the Cape of Good Hope, and, therefore, I am selling off my stock that I may return to Angora and take my flocks to Cape of Good Hope instead of to America, and let Mr. Parr and others of the same views find another stock to raise, which may not bark trees, and whose fleece may sell for more than $1 or $1 25 per lb.

I beg to enclose a little sample of the fleece of imported Angora Goats, and beg you to give your opinion on it. It is washed simply in water. A. EUTYCHIDES.

Owing's Mills, Balt. Co., Md. March 9th, 1871.

Of the beauty of the Angora Goats' fleece there can be but one opinion, and the specimen sent by Mr. Eutychides is particularly fine. We are happy to give the foregoing statements from the pen of one who has had a life-long experience with the Angora Goat. We trust that the experiment of breeding them here will be fairly tried, and fully believe that, with some experience and proper management, they can be made profitable.

WHAT IS TECHNICAL EDUCATION?

Editor of The Rural Carolinian:

DEAR SIR: That the public mind is being awakened to consider the causes which have brought the State to its present condition, admits of no doubt. This is hopeful for the future. I avail myself of the pages of your widely circulated journal to explain more fully, to inquirers (many not known personally) what is meant by technical or practical scientific education. I cannot, perhaps, do better than by giving a synopsis of the labors of that very distinguished technologist, Professor George Wilson, who devoted his life, from early manhood until death, to the effort of permanently benefiting mankind by his lectures and publications on this subject.

He was appointed, in 1855, to the newly-founded Chair of Technology in the University of Edinburgh, which he held with great usefulness to the public, and with increasing European reputation until his death, in 1859. His lectures attracted large numbers, and are spoken of as having been the most popular in the University. His hearers were composed of general manufacturers, architects, engineers, farmers, merchants, bakers, tanners, soap makers, sugar refiners, teachers, doctors and clergymen, besides many students training for industrial colleges. "His Syllabus required three years to complete. He divided his course into mineral, vegetable and animal technology. Under the first were included the relation of the atmosphere, the ocean and tributary waters, and the earth to technology; and among special subjects, fuel, building material, glass and glass making, pottery, earthenware and porcelain; metalotechny, electrotechny and magnetotechny. Under the second or vegetable technology, were considered sacharo-amylaceous substances, sugar-making, albuminous substances and fermentation, distillation, wood and wood fibres, textile tissues, bleaching, dyeing, calico-printing, paper making, scriptorial or graphic industrial arts, caoutchouc, gutta percha and the resins, fats and oils. Under the third section or animal technology, were included the mechanical application and chemical products of bones, ivory, horns, hoofs, tortoise shell, shells and corals, skins, tanning, fish scales, hair, fur, wool, bristles, quills and feathers, animal refuse," etc.*

Beyond this brief synopsis he was continually branching off into subjects connected with his general theme, so that his course was almost without limit, and calculated to develope the industrial energies of the people, and as that kind of instruction was diffused, so in proportion were the resources of the country increased and developed. This is one model for imitation, but every country will furnish us with others, from which we may condense a plan best suited to our position and wants.

To confine scientific instruction to agriculture alone, is not what is required by the present condition of South Carolina and the South. We require a comprehensive course of instruction, including agriculture; one that takes the entire catalogue of science and art. Such schools would develop all the natural and material resources of the State, and be a foundation upon which its future prosperity would be built with unerring certainty; short of which there is no hope for Carolina. To suppose that the State will ever recover from her depressed condition so long as her prospects are limited to one staple, I may say to one branch of industry, is absurd. All history proves this.

The founding of such institutions as are required is in the hands of the people themselves. "Aid thyself, and heaven will aid thee." I speak to the people, not for themselves alone, but as parents. To fail to realize the importance of such momentous considerations, is to doom our posterity to poverty or banishment from their native land, to meet a like doom under auspices less favored.

THOS. G. CLEMSON.

Pendleton, S. C.

GRAPE GROWING.

Editor of The Rural Carolinian:

I will reply through your Magazine to a correspondent at Georgetown, S. C., that the Scuppernong Grape does not grow from cuttings; and that the time to plant the rooted vine is from November 20th to February 10th. And to another correspondent at Jackson, Miss., that after ten years experience here in the culture of the grape, I trim the Delaware, Catawba and Diana, on the spur system; the Concord and Clinton, on the horizontal system; and the Black July, on trellis system.

The Delaware, Diana and Catawba can be planted six by six, and every four rows leave one for convenience of labor in gathering, etc. Set a stake eight feet long to each vine, sharpened at both ends. Concord and Clinton can be planted four by six—four feet from vine to vine and six feet from row to row, having two stakes to each vine; also, leaving vacant every fourth row. Black July can be planted thirty by fifteen; thirty feet from vine to vine and fifteen feet from row to row or trellis. The fork for the spur, horizontal or trellis system, must not be formed less than twelve inches from the ground, and never more than a single cane from the ground.

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* Memoir of George Wilson, M. D., F. R. S. E., Regius Professor of Technology in the University of Edinburgh, and Director of the Industrial Museum of Scotland. Jessie A. Wilson, 8vo, Edinburgh.

I cultivate the grape the same as corn. After the 10th of March, the turn plough is not admissable into it; therefore, after that date, the sweep or the cultivator is the best. For manure, lime, salt and superphosphate are the best. Mix with decomposed oak-leaf manure or ashes. After three years from planting, the first top roots should be removed and a good dressing of manure be given to each vine. Be careful not to let your vines overbear, as that will bring into your vineyard a disease which I call the black-heart. This disease appears in vineyards not well cultivated, and the result is they perish.

Aiken, S. C. L. MERZEAU.

THE LANGSTROTH BEE HIVE.

Editor of The Rural Carolinian:

In recommending the Langstroth hive, I have no "axe to grind." I decided upon its adoption only after a thorough investigation of the merits of all other hives, of which I had, or could get any information. The experience of several years has convinced me that it is the simplest, best, and cheapest for successful bee-keeping. I assure "D," of Sumter, that he has not been correctly informed as to the frames warping and getting out of order. If he will visit my Apiary, I will convince him in three minutes that such a disaster cannot possibly occur. I venture to assert, that without the movable frame, success in bee-keeping need not be expected. It is the *sine qua non* of a *good* hive.

The American is a very good hive, having movable frames, but the Langstroth is, in my judgement, simpler, and much better adapted to the various operations necessary to be performed by the Apiarian, in the management of bees, such as transferring, dividing, artificial swarming, non-swarming, queen-rearing, feeding, etc.

I would not let any bee-palace, or hive of any name or patent whatever, have room to stand in my Apiary, that did not have the movable frame.

Among the important industrial pursuits of the South, may Apiculture aspire to a place? Will it pay? *Nous Verrons,*

JOHN H. KINSLER.

Columbia, S. C.

[Will Mr. Kinsler please give us some notes of his experience in bee-keeping. Will it pay? and if so how must the business be managed?]

CURE FOR CHICKEN CHOLERA.

Editor of The Rural Carolinian:

In your February number of THE RURAL CAROLINIAN, inquiry is made as to the treatment of cholera in poultry.

Having many sick with this disease, I concluded to try an experiment on them, and with the aid of a smart negro boy, I had some corn meal and finely pulverized charcoal mixed up into pills, (one third charcoal,) and had all the fowls caught that were down and drooping, and making the boy open their bills, had a pretty good feeding of the pills forced down their throats; then had them put up in coops, without any water, and in two or three days they were well, and I lost no more after treating them in this manner. It is well to have a few onion tops cut up fine and thrown in each coop. Their craws were generally overloaded with green trash, and had an offensive smell; and charcoal is the thing; try it. Feed them for a few days after with corn meal.

W. H.

BLIND STAGGERS.

Editor of The Rural Carolinian:

It is a well known fact that thousands of valuable horses and mules die annually in the South with "blind staggers." This disease is caused by feeding with defective grain; and if those entrusted with feeding stock were as careful in selecting corn for *the horse* as they are for their own *bread*, death from this disease would seldom occur. My plan is to select the corn, and "nubbin" it; or shell off all rotten corn; then fill two tight barrels and cover with water; when one is emptied, fill again and use out the second barrel, etc.

Some horses may refuse to eat "soaked" corn at first, but they will soon like it better than the dry hard grain; besides "soaking" has many other advantages. Try it.

H. C. HYDE.

Florence, Ala., January, 1871.

WHEN TO PRUNE PEACH TREES.

Editor of The Rural Carolinian:

I have searched various authors upon this subject, without finding a satisfactory answer. A writer in the November number of THE RURAL CAROLINIAN says, "from August to January; but the earlier the better." I pruned in August, the trees shot forth and grew well, and I thought that was the time; but the next spring, to my astonishment the trees thus pruned had *very* few blooms. From this little experiment, I conclude that August may do for luxuriant growth of trees, but not to produce fruit the ensuing summer

Will some of your experienced peach growers give us the benefit of their observations.

JOSEPH QUATTLEBAUM.

Doko.

CAROLINA RED JUNE APPLE.

Editor of The Rural Carolinian:

I join with you, Mr. Editor, in saying that this is one of the very best—perhaps, *the* best—of our early apples. For pies and dumplings there is nothing better. My ear-

liest recollections are associated with the bright red fruit of "the old June apple tree." I remember a tree of this variety under which a two-ox load of marl had been dumped unintentionally, but never removed, that was the remark of all the neighborhood for its thrifty appearance, gigantic growth, and big crops of fine, large, smooth apples. It bore a full crop every year, often requiring forks to support the limbs. That tree bore *loads* of apples, and many a bushel found its way, every season, to all the neighbors who wanted them. Marl is, unquestionably, a "good thing" for orchards.

B. W. J.

A NEW VARIETY OF COTTON.

Editor of The Rural Carolinian:

Enclosed please find lock of a new variety of cotton; the seed of which please plant, that we may hear something more of it in future. It originated by hybridization. It gins well on the McCarthy gin, yields three times as much lint per acre as Sea Island, and one-fourth more lint per acre than the most prolific short cotton. It is more glossy, silky, and strong than Sea Island, and sells in Savannah for one-fifth more.

W. J. M.

Morrison's Mill, East Florida.

INQUIRIES AND ANSWERS.

J. G. replies to "A Constant Rural Reader" who asks for a preventive for distemper in young hounds, as follows:

Vaccinate your puppies as you would a child for the smallpox, and they will never take the distemper. I cannot give you a reason for this remedy, as I am no physician; but of its success I am certain. If your hounds have distemper already, give one tablespoonful of table salt as an emetic, then give as much lard as he will eat. If the dog refuses to eat, force about one-half a gill of lard down him once or twice a day. If a bad case, rub his spine with [diluted?] Carbolic Acid. I keep a large pack of hounds, and never lose any by distemper.

——R. C. asks: "Would not the Bamboo Cane grow with us, and if so, why not introduce it through the Agricultural Bureau, and could not the *Maté* of South America, also be introduced; for it is a *Ilex* resembling the *Cassiné.*" He adds: "The caper plant, *Capparis spinosa*, will thrive here on the coast. I imported, many years since, plants from France, which, with a mulching of manure proved perennial, and one plant produced four bottles of the pickled Capers each season. I imported my plants from Messrs. André, Leroy & Co., of Angers, France, costing about three francs (fifty-six cents) each tree. Since then I have been unable to import any more, my old plants having, during the war, died out."

——E. F. C., Florida. Horses and mules, if allowed to feed on your natural wire-grass lands, cannot avoid getting sand into their stomachs, and they often finally become what is called "sanded." We know no preventive but keeping them up and feeding them with hay, grain and cut forage.

——"A Young Farmer" wishes to know more about the best Reaper and Mower and the Sulky Cultivator; also about the management of an Orchard, Grape vines, Strawberry beds, Bees, etc. We shall be glad to hear from contributors on any of these subjects.

——J. F. D. Marl has an agricultural value and in some cases, as along the coast of New Jersey, has been made an object of commerce, but can be made to pay for shipping, we think, only where transportais cheap.

——C. de L., Louisiana. The sprig you sent is Silver Maple, (*Acer dasycarpum*) with its winged seeds, (not flowers.) It has yellowish flowers early in spring. A very beautiful tree.

——W. B. Jones, Surry C. H., Va., asks some one, who has them to spare, to send him seeds of Tanyah and Chinese Yam, either or both. [The Tanyah is propagated by off-sets of the roots.]

——J. H. C. Sow plaster at the rate of a bushel to the acre when the grass is wet. Sow it now. It should have been sown earlier.

——H. E. D. Inquires which are the better, lead or iron pipes for conveying water for stock and the cost per foot of each. Will some one who knows tell him?

——J. H. C., wishes to know the best way to keep cider sweet.

LITERARY AND HOME DEPARTMENT.

ANDENKEN.

BY F. MATTHISSON.

Ich denke dein
Wenn durch den Hain
Der Nachtigallen
Accorde schallen.
Wann denkst du mein?

Ich denke dein
Im Dämmerschein
Der Abendhelle
Am Schattenquelle.
Wo denkst du mein?

Ich denke dein
Mit süsser Pein,
Mit bangem Sehnen
Und heissen Thränen
Wie denkst du mein?

O! denke mein
Bis zum verein,
Auf besserm Sterne!
In jeder Ferne,
Denk 'ich nur dein.

REMEMBRANCE.

I think of thee
When through the grove
The Nightingales
Chant songs of love.
When dost thou think
Of me?

I think of thee
In Twilight's gleam,
By shady fount
And woodland stream.
Where dost thou think
Of me?

I think of thee
With sweet unrest,
With tears that burn
And yearning breast.
How dost thou think
Of me?

O! think of me
Until we meet
'Neath happier Stars!
Though absent, sweet,
I only think
Of thee!

BARTON GREY.

SEVERAL TRIED RECIPES.

I think I may be conferring a favor on some of my fellow housekeepers by giving them, through THE RURAL CAROLINIAN, the following recipes. They are not original with me, but have all been tried and found good—that is, *we* like them. Tastes differ, but let others try them:

AMHERST STREET PUDDING.—Five and one-half cups of sifted flour, one cup of molasses, two cups of milk, two cups of raisins (pitted)—part currants an improvement—one and one-half teaspoonful of soda, one teaspoonful of salt, one tablespoonful of butter, cinnamon fresh ground, and a little of ground cloves—add carefully to taste; boil five hours in a tin form (long boiling is to be desired.) Eaten with hard white sauce or boiled molasses sauce.

This is excellent, and will agree with those who cannot indulge in richer fruit puddings.

TOMATO SOUP A LA OYSTERS.—To one quart of canned tomatoes, or others which have been boiled about fifteen minutes, add two quarts water and boil fifteen minutes more; then drop in carefully, a little at a time, enough pulverized saleratus or soda to neutralize the acidity, which you may know by its ceasing to foam—usually about an even teaspoonful to a quart. Then add one quart of rich milk, six or eight crackers pounded finely; butter, salt, and pepper as for oysters; let it boil up and serve immediately. It strongly reminds one of oysters, and is very nice for sick persons as well as highly palatable for well ones.

COTTAGE PUDDING.—Half a pint of sugar; four tablespoonsful of melted butter; one pint of sifted flour; one egg; one teaspoonful of soda dissolved in a half pint of milk; two teaspoonsful of cream of tartar, rubbed into the flour; a pinch of salt. Bake one hour, and eat hot with sauce.

PUDDING SAUCE.—One tablespoonful of flour, stirred smoothly into a bit of butter the size of an egg; one half pint of sugar, worked in; the grated peel and juice of a lemon; one half pint of warm water. Let it boil, take it off; let it cool a little, and stir in both yelk and white of a well-beaten egg.

MOCK DUCK.—A steak of beef, well beaten, a rich stuffing, such as is used for ducks; spread it over the beef, and roll it in the

form of a duck; then bake. Make a rich gravy with onions and pour over it.

To Cure Creaking Shoes or Boots.—Drive a row of pegs along the middle of the sole, from toe to heel; or pound the soles well over some hard substance, a flat-iron, for instance. This is a sure remedy, according to Daisy Eyebright in *Country Gentleman*.

Mrs. M. E.

SOWING AND REAPING.

We can never be too careful
What the seed our hands shall sow;
Love from love is sure to ripen,
Hate from hate is sure to grow.

Seeds of good or ill we scatter
Heedlessly along our way;
But the glad or grievous fruitage
Waits us at the harvest day.
Whatso'er our sowing be,
Reaping, we its fruits must see.

[*From "Songs of the Grange."*

GENERAL HOUSTON'S WEDDING SECRET.

The most singular incident in the eventful life of Sam. Houston, and one never hitherto explained, was his abandonment of the Governorship of Tennessee only three days after marrying a young wife. He became a voluntary exile among the Indians of the plains for years thereafter, was made a great chief, and only reappeared in public life when Texas was struggling for independence. The Galveston *News* lifts the veil from the secret chamber of Houston's heart by this strange narration:

"What we know of this matter is so honorable to him that we shall, for the first time, put it in print. We may premise that our information is derived indirectly from one now deceased, who, during her life, had a right to know what caused that strange episode in the life of the great man Governor Houston's first bride was a Tennessee belle of surpassing beauty, and of considerable social rank. She was, if not the affianced bride, at least the sweetheart of a neighboring gentleman, when Gov. Houston sought her hand. Her family being very ambitious, forced the match, and she was married. After retiring to her bridal chamber, her conduct was such as to cause him to suspect that while her hand was his, her heart was another's. She confessed the truth when interrogated, and while promising fidelity and wifely duty, declared herself unable to love him. He at once retired from the house, leaving his bride as pure and spotless as ever. He then resigned his position and went among the Camanches. In due time the lady sought and obtained a divorce."

KITTY'S DROLLERIES.

Kitty's papa is a physician; and one night she said, in her little prayer, "O God! bless my papa, and take care of him when he goes out in the night; for, although he carries a lantern, he cannot take care of himself as well as he can in the light." Having been troubled with unpleasant dreams the previous night, she offered this prayer one evening: "O God! take away all my bad thinks; and if I have any thinks at all, let them be pleasant ones, so I shall have pleasant dreams."

One day, little Kitty took her lunch into the parlor to eat, which she was not allowed to do. Her mother, coming into the room soon after, said, "Why, Kitty! who made those crumbs on the carpet?" Kitty immediately replied, "God." "Why, Kitty! what do you mean?" said her mother. "You know you told me the other day that God made *every thing*," was Kitty's answer.

At one time there was a lady visiting Kitty's mother who had false teeth. Seeing her take them out one day, Kitty, with the greatest simplicity, asked, "Mrs. Morton, can you take out your *tongue too?*"

One evening, when there was a severe thunder shower, Kitty said, "Mamma, I guess God is putting his little children to sleep; for I heard him *pull out the trundle-bed!*"

One night Kitty had sat up later than usual; and, when she went to bed, she did not feel inclined to say her prayers. Her mother said, "Does my little Kitty want to go to bed without asking God to take care of her through the night?" Kitty replied, with a great deal of emphasis, "Well, mamma, I *did that the other night*, and I *lasted till morning!*"

Kitty's aunt had been trying to teach her to repeat the beatitudes; and one night, after Kitty had been so naughty as to require punishment, her aunt said to her, "Kitty, I have another verse to teach you to-night; and I want you to remember it, and say it to me in the morning." So she taught her this passage: "The way of transgressors is hard." In the morning she said, "Can you repeat your verse, Kitty?" "Oh, yes!" said she, and straightway commenced, "Blessed are the *transgueshors;* for they shall be *hard.*"

A little girl, whose father went out as chaplain in our late war, prayed for him one night in this way: "Dear God, bless my papa, and do not let him die; but, if he is sick, you needn't be troubled, because he has got *Hall's Journal of Health!*" Did Dr. Hall ever have a better recommendation than that.—*Oliver Optic's Magazine.*

MEDICAL PROPERTIES OF CELERY.

I have known many men, and women too, who, from various causes, had become so much affected with nervousness, that when they stretched out their hands they shook like aspen leaves on windy days—and by a daily moderate use of the blanched foot stalks of celery leaves as a salad, they became as strong and steady in limbs as other people.

I have known others so very nervous that the least annoyance put them in a state of agitation, and they were almost in constant perplexity and fear, who were also effectually cured by the daily moderate use of blanched celery as a salad at meal times. I have known others cured, by using celery, for palpitation of the heart. Everybody engaged in labor weakening to the nerves, should use celery daily in season, and onions in its stead when not in season.—*Practical Farmer.*

THE WOMEN OF THE FUTURE.

Women are not so universally beautiful, so wise and so good as they might be, and it is to the interest of humanity that they should be beautiful, wise and good. Consider in the first place the question of beauty. The more hopeful look forward to the time when something of the old Greek feeling for physical perfection shall have revived, and a simple and more healthful life shall have fitted women to become mothers of a noble race. In this respect we are wiser than of old, but, though hygiene and common sense have done much for ourselves, they have done much more for our children. We of the present generation are the offspring of tight-lacing mothers; but small waists, tight shoes and other abominations are no longer universal. Dress is much better adapted to out of door life than formerly. Etiquette has been relaxed, and our young women enjoy a freedom from physical restraint undreamed of by their grandmothers. Health has ceased to be the monopoly of the other sex. Still the majority of women lead far from wholesome lives; and as beauty is more or less a matter of health, too much can never be said against such abuses of it as are yet in fashion. The worst of these abuses is that they lead to a perversion of taste. Quite naturally the fragile type of beauty has become the standard of the present day, and men admire in real life the lily-cheek, small-waisted, diaphanous-looking creature idealized by living artists.—When we become accustomed to a nobler kind of beauty we shall attain to a loftier ideal. Men will seek nobility rather than prettiness, strength rather than weakness, physical perfection rather than physical degeneracy, in the women they select as mothers of their children. Artists will rejoice and sculptors will cease to despair when this happy consummation is reached. Let none regard it as chimerical or Utopian. A very little rationalism brought to bear upon daily life would place physical well being within reach of women of all ranks; and where health leads the way, beauty is seldom slow to follow.

Few will deny that wisdom, whose essence is common sense, has a large share in determining the happiness of social and domestic life. Is it not reasonable to suppose that the various reforms in female education will have proportionate effect upon the female character, and that the women of the future will differ from the women of the present, intellectually, as well as physically? Steady culture, increased habits of self-reliance, wider views of life, and a keener appreciation of the truth for truth's sake, can but enlarge and elevate the whole sex. The obvious inference is, that just as a more healthful mode of existence will invigorate and beautify the bodies of women, so a rational mode of existence will strengthen and improve their minds. Frivolity, pettiness, inactivity, and other faults of which men most complain, will make room for opposite qualities; and who shall aver this to be against the interests of humanity? Perhaps nothing causes more domestic unhappiness than downright silliness. A foolish wife will often bring about as much mischief in her husband's home as a persistently evil-tempered one could do, and with the best intentions in the world, is sure to hinder and hamper him upon every occasion. Now silliness is the first stronghold of evil that a good system of education will storm. Just so long as girls are trained to frivolity and irresponsible habits from childhood upwards, will they become frivolous and irresponsible wives and mothers. In granting, then, that the women of the future must of necessity inherit a large share of physical and intellectual excellence, we are led to extend the same happy prophecy of the moral faculties. Women often commit grave as well as small errors, not because they are perverse by nature, but because their reason is at fault, and they fail to recognize the proportionate relation of things. Again, habits of subservience induce a cowardly attitude of mind. Very few women have the courage to be individual. Very few women estimate their own lives of any value in the fullest sense of the word. They know well enough that they have some use as wives, mothers, daughters; but that they can have any share in the well being of the world does not occur to them. Self-development conveys to their minds something quite apart from the duty of wife, mother or daughter, while the truth is that self-development embraces every other duty. Ill, therefore, does it become those who satirize women, to hinder any effort made in their behalf, whether edu-

cational or social; always remembering this, however, that such efforts are likely to do very little good which tend to make of women weak imitations of men.—*Pall Mall Gazette.*

TABLE ETIQUETTE.

Politeness is sometimes said to be akin to morality. It is more than that; it is morality itself in its highest form. Its laws are higher than the laws of the land. The latter are (or are supposed to be) founded on justice. They require us to give good weight and measure, to fulfil our contracts, to yield half the road. Politeness adds to this, charity, deference, and self-sacrifice—a giving up of the best side of the walk, or the whole of it, if need be. To justice it adds kindness.

All the standard rules of etiquette were originally founded on these high principles, and were intended to promote the convenience, comfort and happiness of society. The reasons for some of them may no longer exist, but the principles are eternal and universal. You will see their application in the following Rules of Table Etiquette:

1st. Do not keep others waiting for you, either at the beginning or close of the meal.

2d. Do not sip soup from the tip, but from the side of the spoon.

3d. Be careful not to drop or spill anything on the table-cloth.

4th. Keep your plate neat; do not heap all sorts of food on it at once.

5th. In passing your plate to be re-helped, retain the knife and fork.

6th. When asked for a dish, do not shove but hand it.

7th. While drinking do not look around.

8th. Instruct the servant to hand the cup at the left side, so that it may be received by the right hand.

9th. Do not drink your tea or coffee without first removing the teaspoon from the cup to the saucer. The saucer is to hold the cup, and not to drink from.

10th. Use the knife for cutting only; never put it to the lips nor in the mouth.

11th. Break your bread into small pieces, and rest them on your plate while spreading.

12th. Do not eat too fast; besides giving one the appearance of greed, it is not healthful.

13th. If you find anything unpleasant in your food, put it aside as quietly as possible without drawing the attention of others to it.

14th. Do not open the lips, nor make any unnecessary noise in chewing.

15th. Do not touch your head while at the table.

16th. Do not rest the elbow on the table.

17th. Do not speak with the mouth full.

18th. Require the servant to brush the table neatly before bringing on the desert.

19th. Be thoughtful and attentive to the wants of those about you.

20th. Converse on pleasant subjects with those sitting near you.

21st. Do not say anything which you are not willing all present should hear.

22d. Leave your plate with the knife and fork lying parallel, the handles pointing to the right.

23d. Never leave the table before others without asking the lady or gentleman who presides to excuse you.

STUDYING OUT OF SCHOOL.

"An English paper complains of the practice of requiring pupils to prepare school lessons at home, as a serious and unnecessary interference with the comfort of the fireside. It claims that a child's evenings should be given to relaxation and family pleasures, and that these should not be trenched upon by school tasks. The practice of assigning home lessons is also condemned by many eminent physicians as prejudicial to health. This subject has also received the attention of the school authorities in many of our cities, and regulations to guard against the overtaxing of pupils have been enacted. In Boston, teachers are forbidden to assign lessons requiring home study to pupils in the primary schools and to girls in the grammar schools, and not more than one hour's home study can be daily required of the boys in the grammar schools and in the three lower classes in the high schools. It is also a peremptory rule that pupils shall not be required to study at recess. It is true that these rules are not always observed, but they show a praiseworthy effort to check what is a recognized evil. The recitations and exercises of the pupils in our upper schools consume so great a portion of the regular school hours that little time is left for study. The time spent by grammar and high school pupils in school, in the preparation of lessons, does not exceed, on an average, two hours a day. Of course, the necessary amount of study cannot be compassed in this brief time, and, as a result, one or more lessons are prepared out of school; and this leads to excess in study. We often hear of frail girls studying until ten and eleven o'clock at night to meet school requirements, and we more often wonder that sensible parents permit it."

The above article contains much good sense. We never pass a child in the streets carrying home a load of books from school, without an emotion of pity. Study is work,

and the hardest kind of work. What would be thought of a master mechanic who required his apprentices to carry home their tools with them and required them to work at night? Yet this would not be as hard as to require a child to study at night. In the one case the labor is physical, and in the other mental. We all know how much more wearing to the system the latter is than the former. No growing youth of either sex can stand more then five hours of confinement and mental labor. Let the parent undertake to read or study more than five hours continuously, and that parent will then sympathize with the child. One prominent cause of the amount of study required of children out of school, is laziness on the part of the teacher. It is troublesome to compel children to study. It is rather pleasant than otherwise to hear a good recitation. If the child studies at home, the mother does the troublesome work and pays the teacher for it. We have seen mothers whose whole afternoons or evenings were occupied in superintending the lessons of the teacher next day. What then, is the use of the teacher? Parents should resist this imposition, both on their own account and that of the children. Let the school books for the most part remain in the school room where they belong. It is as natural and as necessary for children to play as it is for a colt or a kitten. When they come home from school, let it be "sweet home," free from all annoyance and care. If they touch books let them be those which will combine amusement with instruction. So shall we have a growing generation with sound minds in sound bodies.—*Plantation.*

RAILROAD SIGNALS.

One whistle, "down brakes;" two whistles, "off brakes;" three whistles, "back up;" continuous whistles, "danger." A rapid succession of short whistles is the cattle alarm, at which the brakes will always be put down. When a conductor gives a signal by a sweeping parting of hands on a level with his eyes, it means "go ahead." A downward motion of the hand, with extended arms, "stop." A beckoning motion of one hand, "to back." A lantern raised and lowered vertically, is a signal for "starting;" swung at right angles or crossways the track, "to stop;" swung in a circle, "to back the train." A red flag, waved upon the track, is a signal of danger; so of other signals given with energy. A red flag, hoisted at a station, is a signal for a train "to stop;" stuck up by the roadside, it is a signal of danger on the train ahead; carried unfurled upon an engine, is a warning that another engine or train is on its way.

Oliver Optic's Magazine.

PUBLISHERS' DEPARTMENT.

OUR CONTRIBUTORS.

No Agricultural paper or magazine in the country, North or South, we venture to say, can boast a more *weighty* list of contributors than THE RURAL CAROLINIAN. Other publications might, perhaps, display a longer array of names, but in practical experience, learning, talent, influence and social position, the following roll is not easily matched, and we feel an allowable pride in having so soon drawn around us such an able corps of co-laborers in the great work of promoting agricultural progress in the South. We make room at this time for only a partial list:

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Some time since the proprietors of the Charleston *Weekly News* declined clubbing any further with THE RURAL CAROLINIAN. We are thus unable to renew old or take new subscribers under the previously existing arrangement. We are still clubbing with many first-class leading Dailies and Weeklies through the South.

PREMIUMS.

We issue, with this number, in circular form, our list of premiums for subscriptions to THE RURAL CAROLINIAN. We will continue to add to the same from time to time.

WALKER, EVANS & COGSWELL,
And D. WYATT AIKEN.

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WALKER, EVANS & COGSWELL,
Charleston, S. C.

FARM AND GARDEN CALENDAR FOR APRIL.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance North or South of this place must make the necessary allowances for difference in the seasons.

AGRICULTURAL OPERATIONS.

Cotton—you will not put in too much this year—now claims the planter's time and thought. Let the work for this crop be well done. A stand from the first planting is very important, so whether you plant by machine or by hand, let the work be well done. Mellow beds and even rows are essential to good cultivation. A fine-toothed harrow is an excellent thing to run over the tops of the beds. It may have a cross-bar behind the middle with a triangular piece of wood attached, point down, to make a clean, even trench for the seed. This facilitates the first working very greatly.

—— Corn should have its first working as soon as the cotton is in, if not before, then go back to the cotton and give it the first working. Run close to the corn with a small plough, or use the cultivator, as recommended on page 392 of this number. You may go deep if you like, or the land requires it, for if the corn be young, as it should be, there will be no danger of breaking roots.

—— Sweet potatoes should be planted largely everywhere. This crop is a sure one, and helps out wonderfully where corn is short. A writer from Texas gives the *Country Gentleman* a new mode of planting the sweet potato:

Select the largest potatoes for seed, instead of the smallest, as is the usual practice. At the time of bedding out the potatoes, procure a barrel, or box, that will hold water. Fill this with corn-cobs, and add liquid manure till the cobs are entirely submerged. Let these stand till the potato plants are ready for transplanting, by which time the cobs will be rotten, though still holding together. Draw the plants, and wrap each once around a cob, which bury in the ridge previously prepared, leaving the end of the vine out. The saturated cob furnishes moisture and nutriment to the plant till it gets well established in the soil.

GARDEN WORK.

Omissions in last month's work should now be supplied at once. Keep all parts of the garden free from weeds. They are easily killed when small.

—— Cabbages may still be planted out if you have a low, well-drained, and very rich spot for the purpose. It must be very deeply dug. The Green Glazed is, perhaps, the surest kind for planting at this time.

—— Beets and carrots, for the main crop, if not got in last month, should be planted without delay.

—— Snap beans, planted last month, will need hoeing. Continue to plant every two weeks; also plant lima, sieva, and other pole beans; cucumbers, squashes, sugar corn, etc.; and okra for the main crop.

——Lettuce may still be sown in a cool, well-drained, low spot. Sow where it is to grow, as transplanting imparts a tendency to run up to seed.

——Celery may be put in now in a cool, low, moist spot. Sow on the surface of the ground, which should be very fine, and press or brush in slightly. Prick the plants out as soon as they are large enough to handle, in a partially shaded spot.

——Mangoes and tanyah should be planted without delay as directed in previous numbers; also transplant tomatoes and egg plants.

——As March proved a pleasant warm month, the seeds of *tender annuals* are generally sown in this latitude. Where this has not been done get them in at once; also such bulbs as the lilies, gladiolus, amaryllis, tuberose, etc.

——Grape vines will throw out extra shoots and suckers, which should be rubbed off at once. Young peach trees should be looked after for the same purpose. Mulch newly-planted trees and vines to keep the ground moist about the roots. This is better than watering.

——Strawberry beds must be kept free from runners, if you desire fruit rather than an increase of plants. It is better to *cut* than to pull them off.

Engraved expressly for the Rural Carolinian.

GEN. JOHNSON HAGOOD,

President of the South Carolina Agricultural and Mechanical Society.

THE

RURAL CAROLINIAN.

Vol. II.] MAY, 1871. [No. VIII.

General Johnson Hagood.

The subject of this sketch, whose likeness, engraved for THE RURAL CAROLINIAN, is the frontispiece of the present number, is of English parentage. His ancestors settled originally in Virginia, and anterior to the Revolution of 1776, removed to the Ninety-six District in South Carolina. Early in the present century, his grandsire, whose patronymic he bears, settled in Barnwell, and attained sufficient eminence to be entitled, in Judge O'Neall's opinion, to a sketch in "The Bench and Bar of South Carolina."

The General's father is a practising physician of near fifty years experience, and from his uniform success, good common sense, and sound judgment, has attained a professional eminence only surpassed by the affection which an intelligent community entertain for so sterling a character. The Doctor was, anterior to the war, a successful planter and stock raiser, and is to this day standard authority on this latter subject in the vicinity of Barnwell.

With such a lineage, our subject is justly entitled to the honored position to which he was elevated by the largest convention of planters ever assembled in South Carolina, on the 27th of April, 1869, and again, twice unanimously reëlected in November, 1869, and November, 1870, to wit: the Presidency of the South Carolina Agricultural and Mechanical Society.

But President Hagood's merit need not be sought amongst a noble ancestry. He has made for himself a laudable reputation on more fields than one.

Born on the 21st February, 1829, he is now in his forty-third year. When twelve years of age, he was sent to school in Augusta, Ga., where he remained until he was sixteen, when he entered the Citadel, our State Military Academy in Charleston. Here he graduated, in November, 1847, in his nineteenth year, modestly, but deservedly wearing the highest honors of his class. After graduation, he studied law with his kinsman, Hon. Edmund Bellinger, and at his majority, was admitted to the practise of law.

In 1851, at a time when the *esprit de corps* of South Carolinians was as universal as their State pride, he was appointed State Military Inspector, by

Gov. John H. Means, and in the performance of his duties as Inspector, developed those characteristics which foreshadowed his future usefulness. In December, 1851, he was elected by the Legislature, (a body unsurpassed on this Continent for its dignity, honesty and ability,) Commissioner in Equity of Barnwell District, a lucrative, and then, important office. His opponent was a member of the Legislature, and a man well and favorably known, and deservedly popular. The General held the office of Commissioner for nine years, and only resigned, when by the ordinance of secession, his State called him from the Bar to the Field.

He was elected Colonel of the First South Carolina Volunteers, and was promoted by President Jeff. Davis, to the rank of Brigadier-General, Confederate States Army, on the 21st July, 1862. His military record during the war, which was most praiseworthy, must be read elsewhere. Suffice it here to know, that he commanded on the coast of South Carolina, at Secessionville, Battery Wagner, James' Island, etc., etc., until May, 1864, when he was ordered with his Brigade to Northern Virginia, and subsequently was sent to reinforce Gen. Bragg, in North Carolina, where he remained until the spring of 1865, when he surrendered with Gen. Joe. Johnston.

In 1854, President Hagood married the only child of the late Judge Butler. He has but one child. The year after his marriage he commenced planting, and at the very outset, attained that success which has marked his agricultural career to the present day. Before the war, his average crops were five bales of cotton to the hand, with a surplus of bacon, beef and corn for sale. Since the war, he has been proportionally as successful as a planter. Though a cotton planter, he is independent of the world for his plough animals, having raised every horse and most of the mules now in his possession. Fond of the turf, he is devoted to his thorough breds, and his fortunate sales occasionally, remunerate him handsomely for his devotion.

He plants no lands without manuring, and advocates a liberal, though not an extravagant use of commercial fertilizers, in lieu of the immense compost heaps he was wont to make when labor was manageable. His efforts are, however, unabated towards making manure, and his attention to hurdling cattle is such, that annually his lands receive vast quantities of home-made composts.

General Hagood's rearing, has taught him to be most methodical; and, his practical good sense, has enabled him to apply his system to the times, thereby securing more than ordinary success with freed labor. He retains many of his former slaves as his employees, and wisely adopting the policy of paying monied wages, easily and profitably manages them. No planter in the South is better posted than Gen. Hagood, upon all the minutiæ of plantation life. He exacts daily journals of work from his manager, and himself keeps a plantation diary, as well as an account current with the plantation. Everything bought is charged against, and everything sold is credited to the plantation. This system checks carelessness and wastfulness in agents, and encourages economy in himself; it, also, enables him to calculate accurately,

the cost of producing a pound or bushel of any of the staple products, as well as to know whether his agricultural investment is one of profit or loss.

President Hagood is a man of great prudence and courage; of reserved manners; taciturn and modest almost to a fault; clear headed; of excellent judgment; of finished attainments; of fine personal appearance; and withal, the right man in the right place, at the head of the South Carolina Agricultural and Mechanical Society.

Theories of Fertilization.

The agricultural world seems to be divided in their opinion between several theories that now prevail, more or less in different circles in this country. We propose to discuss briefly the merits of several of these systems, as far as they have been tested by induction, and especially by the planters of the South. Among those which now claim the attention of the public, we note the following:

1st. The fertilizing system, nitro-phosphate theory.

2d. The ameliorating or chemical system of M. Geo. Ville.

3d. The mixed system, composting chemicals and manure.

The first originated in the introduction of Peruvian Guano, from the Chinca Isles to Great Britain, and then this country. Like a great many other important and useful discoveries, it was the result of accident, and has resulted in a new and popular theory among agricultural chemists, uprooting the elaborate investigations of years, and taking precedence of every other system heretofore introduced, especially among the intelligent planters of the South. This theory is, that nitrogen and phosphoric acid being first exhausted from the soil, it is only requisite that they should be returned to it in assimilable and soluble forms to reach the highest state of fertility. The introduction of potash, lime, etc., being only incidental, or intended to supply exceptional cases, as it is found in moist soils, a fertilizer does as well without them.

The discovery of Baron Liebig, that the action of acids on the bone phosphate of lime, replaces a portion of the phosphoric acid, and forms a double phosphate, (which acts promptly and powerfully on vegetable life,) had not a little to do with the development of this system. And, as if Providence intended to aid science in these developments, suddenly immense beds of fossil and mineral phosphates were found in Nevassa and other islands, and on the coast of South Carolina, which have brought into operation much capital and labor for the development of these resources.

M. Geo. Ville, after a series of experiments for six successive years in France, offers another theory which has acquired considerable popularity, among some agriculturists in this as well as the old country. We have never known, however, of its being practically tested in this country; indeed, from his own experiments and admissions, it would prove a perfect failure for the

first two years, requiring the third year for anything like profitable returns. We will let him speak for himself in the following propositions, which contains his theory in a nutshell.

"1st. There exist four regulating agents, *par excellence*, in the production of vegetables—nitrogenous matter, phosphate of lime, potassa and lime.

"2d. To preserve to the earth its fertility, we must supply it periodically with these four substances, in quantities equal to those removed by the crops."

His favorite substances, with their relative quantities, seem to be for one acre as follows:

Phosphate of Lime	352 lbs.
Carbonate of Potassa	352 lbs.
Quick Lime	132 lbs.
Nitrate of Soda	488 lbs.

This he styles his complete manure, the cost of which, and its unsuitableness for our large Southern farms, we referred to in a previous number.

The chemical composting system originated in a recipe which went the rounds of the agricultural papers some years since, and under various modifications is being used by a number of planters in the South. Mr. Bryan, of Green County, Ga., has the credit of first testing these salts in Middle Georgia, and hence the combination is generally known in this section as Bryan's compound. It is composed of various chemicals, as nitrate of soda, sulphate of ammonia, sal-ammoniac, sulph. soda, etc., with bone dust, stable manure, or rich earth. With some it is reported as a success, with others a failure. We understand that in the Middle States a similar practice of composting has had its day, and yielded to the more economical and scientific system of concentrated fertilizers. We predict an early and similar defeat in the South, as heretofore; when mule power was more abundant and labor cheaper, the composting system was tried and completely abandoned on the introduction of fertilizers.

But as to the theories, we propose to investigate their claims by the inductive system of philosophy, as far as facts have come to our knowledge. M. Geo. Ville's complete manure, costing about eighty-six dollars per acre, laid down in Middle Georgia, (to say nothing of transportation away from the railroad,) produced the following results in a three years' course on a crop of wheat:

	Manured.	*Unmanured.*	*Per cent. on Production.*
1861	5,280 lbs.	5,115 lbs.	3,12
1862	4,180 lbs.	3,897 lbs.	6.77
1863	8,250 lbs.	4,095 lbs.	50.36
Aggregate	17,710 lbs.	13,107 lbs.	25 99

The actual profit of this three years' course is $7 99 at present prices of wheat, and money being a little over three per cent. per annum on investment.

The difference between the two first and the last year's is remarkable, for which M. Geo. Ville gives no satisfactory explanation. He seems to suppose

that it is owing to the repletion of the soil with essential elements the first two years, and the consequent exhaustion the third year of those elements. This cannot be the case, as the third year without manure actually produced more than the second, and within a fraction of the average of the three years. We must, then, look to another cause, which, to my mind, is very apparent, viz: the complete manure, especially the phosphate of lime, being in an insoluble condition, it took two years for it to become properly disintegrated, and rendered soluble by the action of vegetable acids in the soil. Thus what science accomplishes in one year, nature requires three, and in many instances more, where bones are merely comminuted, as under the old system. In this view of the subject, we must predict a failure for M. Geo. Ville's system whenever it is tried by the planters of the South, as they expect immediate results, indeed cannot put out money on interest and then wait for the slow processes of Nature.

The following table, which the writer published in the *Southern Cultivator* several years since, will show the superiority of the nitro-phosphate theory over that of M. Geo. Ville, or any other ever tried in the production of cotton. This consisted in a two years' course, and the per cent. on investment is indicated by the line of figures on the right. In other words, the articles in question made enough lint cotton, over and above the natural soil, to pay for the guano, and then the amount indicated on the cost per acre. The second year the per cent. was made from the residue of guano left without the reapplication of any more:

Fertilizers.	1867.	1868.
Peruvian and Pacific	432.	210.
Peruvian and Dried Clay	429.	179.
Peruvian and Dissolved Bones	428.	241.
Pacific Guano	402.	199.
Home Phosphate	363.	375.
Peruvian Guano	355.	120.
Kettlewell's A. A	289.	178.
Baltimore Phosphate	272.	226.
Dickson's Preparation	271.	252.
Poudrette	104.	0.
Lime, Bone and Ashes	81.	117.
Bone ta Feu	67.	87.
Plaster and Potash—loss	14.	215.

1868.

Per cent. on investment made in two years after paying interest on money:

Home Phosphate	738.
Peruvian and Dissolved Bones	669.
Peruvian and Pacific	642.
Peruvian and Dried Clay	608.
Pacific Guano	601.

Dickson's Preparation	522.
Baltimore Phosphate	498.
Peruvian Guano	475.
Kettlewell's A. A	467.
Plaster and Potash	201.
Lime, Bone and Ashes	198
Bone ta Feu	152.
Poudrette	104.

This per cent. was made when cotton ruled high. At present rates some of the last would not pay at all, but the nitro-phosphates occupying the front rank would, from the per cent. on production, have paid well even at the present low prices of cotton.

This subject, of such vast interest to the planter, will be resumed as our leisure serves. E. M. PENDLETON.

Sparta, March 23, 1871.

On the Phosphatic Sand of South Carolina.

Having lately been invited by Mr. C. C. Coe, the able superintendent of the River and Marine Phosphate Company of this city, to make an excursion with him on board the company's steamer, the Gazelle, to inspect their dredging and washing operations on the Stono River, my attention was arrested by the character of the highly colored bluish green sand, brought up in such quantity along with the nodular phosphate. More than half the charge of each scoop often consisted of this very curious material; and in going deeper, with a view to exploration, it constituted seven-eighths of its contents. On being let fall upon the deck of the washing tug, contiguous to the hopper of the washer, it was worked over with hoes and shovels, and the coarser lumps, together with a portion of the finer gravel, introduced into the washer; while the marly and clay looking sand was pushed overboard into the river. The agitation of the contents of the washer quickly separated the fine sandy material from its adhesion to the nodules, even to the bottom of their deepest holes and cavities; while the water floated it off to its former bed in the river.

I noticed numerous smooth water-worn pebbles of the black phosphate, varying in size from that of a walnut down to a hazle nut or pea, diffused through sand. The larger fragments seemed most abundant near the surface of the river stratum, where they were mingled with nodular rock itself. But the sand brought up from a greater depth still contained black grains of the same general description, though in size scarcely larger than mustard seed.

Occasionally considerable masses of the green sand had more the appearance of an argillaceous or clayey deposit, inasmuch as it cohered in large lumps, and even showed an obscurely laminated or stratified structure. Such masses were capable of being moulded in the hand,—their particles being very

fine. Many of them, after going through the washer, came out along with the nodules in a separate and highly compressed state; and strongly reminded one of putty in toughness and consistency. Nevertheless, they were wholly unlike any variety of clay, in not soiling the hands and by not emitting while moist the peculiar argillaceous odor. Besides, on being introduced into water, they were easily disintegrated, and became diffused through that liquid,—the largest portion falling quickly to the bottom, while about one-third remained floating for a long time through the supernatant fluid. The heavier part was ordinary sea-shore sand, containing innumerable black grains; the lighter consisted of flocculent earthy matter, along with what was supposed to be green vegetable matter.

At first I was led to imagine that this material belonged to the so-called green sand formation of the cretaceous period; but a closer study into its character has satisfied me to the contrary. The microscope shows that the green particles which give so deep a color to the material are nothing but minute fucoids; while the impalpable flocculent earthy matter with which they are closely associated, is only a very comminuted siliceous sand. The black grains in the coarser portions of the material consist wholly of the stoney phosphate, worn and reduced by attrition to the size of the grains of the ordinary ocean sand.

The formation is obviously produced by the breaking up and wear of the original phosphatic floor—once a continuous stratum varying from six to eighteen inches in thickness, that covered for a vast area the Carolina coast, prior to its emergence from the sea. This phosphatic floor was bored into by marine growths, and converted into a porous cavernous mass, until at last its cohesion as a stratum was subverted. The loose fragments were then rubbed against each other by the currents, and still further disintegrated by marine animals and plants,—the finer portions the while subsiding into the sands below. This process is still continued wherever the bed is covered by the tide. It has everywhere prevailed at former periods over what are now the land deposits, whose general character is identical with that of the river formation,—being underlaid for many feet with a pulverulent, sandy phosphate though without the color from the living fucoids belonging to the marine formation.

It is of course impossible to say anything definite concerning the depths of this sandy formation. It probably descends for several feet in considerable richness. At the spot where the company is now operating, and which is opposite the plantation of Dr. Jervey, on John's Island, it cannot be less than five or six feet. It may go much deeper.

As remarked above, the formation would ordinarily be called an impure clay. In character, it is essentially the same substance as that found immediately embracing the land phosphate, and entering into all the hollows and cavities of the nodules, where its presence occasions so much inconvenience in the washing process. This foreign matter, however, should no longer be called a clay. It is simply a fine siliceous ooze, rich in a powdered phosphate

of lime that has proceeded from the attrition and disintegration of the nodules themselves.*

But it may be interesting to describe the physical properties of this green phosphatic material still more particularly, before stating its chemical composition.

As lifted from the river bed it does not adhere together after the manner, on the one hand, of harbor mud, or even ordinary wet soil, or of clean sand on the other; but possesses a somewhat intermediate character, whereby it is easily handled by shovels. It drains with rapidity, dries quickly, and forms, slightly cohering masses of a dark greenish black color. These may without difficulty, be crumbled to powder in the hand; and like the wet material, when first raised from the river, if thrown into water, separates speedily into two-thirds coarse sand (carrying down the black phosphatic grains,) and one-third flocculent, siliceous matter, easily floated away from the coarser sediment. Nothing therefore, is easier than the mechanical separation of the comparatively valueless fine material from its more precious phosphatic associate. The latter presents all the properties of ordinary seashore sand, with the exception of the black phosphatic grains. The fine flocculent matter by itself however, when dried, forms a very dense cake, hard to break with the fingers, very difficult to pulverize with the pestle, and slow to mingle again with water. The organic matter present seems to act like a cement to bind its particles together. Before having been dried, it may be added, the flocculent matter is easily bleached by the action of chlorine.

Portions of the air dried green phosphatic sand were found to possess, on an average, the following chemical composition:

Moisture expelled at 212°		2.50
Moisture (with organic matter) at redness		4.00
Silica, fine, nearly impalpable	23.50	63.50
Coarse sand	40.00	
Phosphate of lime		27.00
Carbonate and sulphate of lime		3.00
		100.00

A sample of the flocculent portion was analyzed by itself, and found to be almost wholly free from phosphate of lime. It was also destitute of alumina,—consisting for its inorganic part, wholly of silica, with a mere trace of oxide of iron.

The concentrated or washed sand was found to contain 37 per cent. of phosphate of lime. This unlooked for richness in the phophatic element suggests the preparation of this green sand for use, by a preliminary washing,—a process requiring but very little trouble in practice. When we consider that the raising of the sand from the river bottom by means of the dredge can be effect-

* Note.—The theory of Dr. Lankester, in a late number of *Nature*, to account for the formation of our nodular phosphate, through the influence of clay as a precipitant in carbonated waters, supposed to hold phosphate of lime, is therefore no longer tenable; inasmuch as all argillaceous material is singularly wanting in connexion with the deposit.

ed at a cost not exceeding 25 cents the ton (for the dried sand,) and that the washing can be accomplished within the same amount, it becomes obvious that we have in this formation a resource, one day destined to prove of great consequence to the agricultural interests of South Carolina. It is true that this phosphate is associated with too much foreign matter to justify its being handled except in bulk, or to its railroad transportation; but for use on lands contiguous to water its future value cannot be doubted.

The size of the particles is doubtless such as to make its efficacy slow; and it may be found that it will require (in its washed or concentrated state) to be first treated with strong sulphuric acid, at the rate perhaps of 100 pounds to the ton, whereby the phosphoric acid would be rendered partially soluble, and at the same time the valuable side product of gypsum would be formed. As thus prepared on the plantation, and largely mixed with compost, I cannot doubt it would be well worth an early trial by our sea-board planters.

The supply appears to be perfectly inexhaustible; and its chief benefit must enure to the immediate region in which it is found,—a circumstance on which we may justly congratulate ourselves while we are witnessing the exportation to foreign lands of the greater portion of our phosphatic nodules.

CHARLES UPHAM SHEPARD, Sr.

Charleston, March 27th, 1871.

A Plea in Behalf of South Carolina and the Planters.

The article on "Agriculture and South Carolina," in the April number of The Rural Carolinian, is very interesting, and contains good advice; but I cannot refrain from writing a few words in behalf of South Carolina, and that much abused class, the planters.

Almost every journal of the day that we take up has some article therein, blaming the poor planter, and often soundly berating him for the desolate condition of the country. I grant that the policy of planting cotton, to the exclusion of other products of the soil, is a bad one, and no one deprecates it more than the writer, because the evil results, though disastrous to the country as a whole, are felt by none so keenly as by the planter himself.

Your correspondent, after speaking in glowing language of the beautiful plains and happy prosperity of Italy, and the agricultural schools of Scotland and Ireland, turns with "feelings of mortification and regret to look upon the desolate fields of South Carolina," and goes on to lay the blame at the door of the planter and the cotton plant.

Before our late war, South Carolina could boast of her extensive and well cultivated fields of cotton and grain, and her planters were then rapidly improving their system of farming, which, no doubt, would at this time, had it not been for the result of the war, compared favorably with that of Italy and other countries. South Carolina could, before the war, also boast of

many a stately mansion and beautiful villa, the habitations of a people unsurpassed in intelligence, education and hospitality. She could boast, too, of the well planned settlements and neat quarters of her laboring population, and of her fast improving and rapidly increasing stock of horses, cattle, sheep, and hogs. Your correspondent should remember that, at the time he writes of Italy, a hostile army had not just swept across her borders, carrying fire and remorseless plunder in its path.

The planters, as a class, before the war comprised the most influential portion of our population, and were the props and backers to all other projects and employments. The Southern planter's credit was then unlimited. Capitalists were anxious and glad to lend him money, as a good investment; and, in many instances, the credit and standing of the merchant was based solely upon the patronage of the planter. Unfortunately, now, for the welfare of the country, "the tables are turned." The planter, without doubt, was the greatest, if not the only real loser by the result of the war. His slaves, who were his capital, set free; the accumulated interest on the same, viz., provisions, stock, houses, fences, etc., and "C. S." bonds, swept away in the march of the armies which traversed our State in 1865. He was left (to use a vulgarism) "flat footed." What was he to do? No money, no stock, no agricultural implements; lands exhausted by continuous grain crops, during the war, and, worst of all, a completely broken up system of labor; real desolation and starvation, in many instances, staring him in the face. How, under these circumstances, can any one expect, only six years afterwards, to find beautifully cultivated plantations, magnificent dwellings, etc.

Nothing daunted, the planter, where he could, borrowed money, at an outrageous percentage, (obliged to have it, or starve,) re-stocked his farm, and started life and planting anew, and that with a laboring class utterly unfit for the new order of things. The money borrowed must be, per contract, paid back within twelve months at farthest. Lands producing, as a general thing, an average per acre of seven and a half bushels of corn, and very little more of other grains, cannot compete with the more fertile lands of the Northwest; and it would take at least three years to make a stock farm remunerative. High figures were offered for cotton—*the* product of *our* soil—the planter, consequently, bends his energies to the cultivation of this staple as the only source from which to pay back the money borrowed, and better his condition. The crop was gathered, and had to be sent to market at once, to pay up debts; and capitalists and speculators, knowing the condition of things, hold off, and, eventually, buy up the cotton at a low price, out of which had to come a Government tax per pound. The consequence is, the planter gets nothing for his labor and trouble of mind, and is blamed for the condition of things. The merchants, it is true, have for the most part been rather lenient towards him, but still there is that high interest on money to pay, with a mortgage on personal property, and lien on *entire* crop as security, which acts like a log-chain about his neck, and almost makes him give up in despair of ever regaining his footing. Everything seems combined to clog

his path. Provisions are still held at high figures. Our lands are not remunerative, without an extensive outlay in fertilizers, which, if of good quality, are sold at much higher rates than the price of cotton warrants.

Now, as to the remedy for this present condition of affairs, I say, let the monied men lower their rates of interest, taking mortgages to real estate as security; lay out some of their money in lands, of which there is a large area in market, and cheap; then encourage immigration in the same manner the present landholder is advised to do. Let them club together, establish the agricultural schools, much needed, and let agricultural improved implements, labor-saving machines, and good fertilizers be made at lower prices, which certainly can be done. Let farmers establish the wages system for labor; let them have county clubs and fairs, and make horse-racing, etc., a subordinate feature in our State fairs. Let us help and encourage the farmer in every way we can, and then we, too, can gaze with "inexpressible delight" and satisfaction "upon the smiling beauty of" our "gardens."

The Rural Carolinian, Mr. Editor, does its duty, and should be in every home of the South.

"PLANTER."

New Zealand Flax.—(Phormium Tenax.)

[Mr. Richard Peters, of Atlanta, Georgia, has sent us the following communication, written by a gentleman of California, together with some seeds of the textile plant to which it relates. The seeds we have distributed among a few careful planters, and hope in due time, to get favorable reports from them. A specimen of the fibre now before us, shows it to be of extraordinary strength, and as its preparation for market is comparatively simple, we hope it may prove valuable with us. It is more likely to succeed in the extreme southern parts of the Southern Atlantic and Gulf States than further north.—Ed.]

It grows in almost every variety of soil, from the rich mud and clay along the banks, and at the mouths of rivers and lagoons, in the soil of the valleys and plains, on the tops and sides of many of the hills, and all along the seashore close to high-water mark, among clean white sand. I think the soil along the banks of our Southern rivers admirably adapted for its growth, and that it would flourish among the low lands and islands along the coast.

I have been in Charleston, S. C., Apalachicola, Fla., and New Orleans, and have known several Americans in New Zealand, who were better acquainted with our Southern country than I am, and all agreed that it would grow there successfully, judging by similarity of soil, situation and climate. One friend who had had a large experience as clerk in a steamer on the Mississippi, and other Southern rivers, used to express the belief, that it would grow along their banks in *thousands* of tons.

It grows in bunches, two leaves starting first, and when about a foot high, are about an inch wide, double and one clasping the other, these spread apart and two more come up inside, and so they keep increasing, and side shoots starting, till it gets to be a large bunch from four to six feet across, with leaves from six to nine feet long and even longer.

There is a quantity of gum in the leaves and some free gum in the fold of the two halves toward the bottom. This gum is now used in England to make "safety envelopes," as no steaming or soaking will open them. There is a large quantity of honey in the blossoms. The stalks are very light and pithy, and are used by the natives to make their canoes more bouyant, by binding bundles along the sides.

These stalks split or chopped fine and used in stuffing the furniture of vessels and steamers would make each piece a life buoy. The leaves cut green from the bush and split to the proper size, serve a great variety of purposes, as strings and small ropes, are woven into sacks and baskets, make nets and mats, the latter, stronger and more durable than those brought from China. A few pieces of a leaf steeped in hot water will raise yeast like hops, and it has been suggested by Dr. Hector, the highest scientific authority south of the line, that the latter principle in the leaf can be applied to the manufacture of beer.

The people of New Zealand, have long been aware of the plant growing wild so abundantly around them, but it is only within the last few years that machinery has been invented to work it to advantage. The principle in the several machines used is the same. The leaves are cut green and fed to the dresser, which consists of two rollers, one smooth and one grooved, these about two inches in diameter, which feed the leaves to the beater, a cast-iron cylinder a foot in diameter and six inches across, with steel *bars* a half square, set diagonally across its surface. This drum revolves very rapidly and the bars strike the leaf and knock the fleshy substance from it and leave the fibres hanging below. This is washed and bleached and then scutched, when it brings in the English market from two hundred to three hundred dollars per ton. It is estimated that an acre of good flax land will yield from twelve to fifteen tons of green leaves and two tons of dressed fibre. There is no particular season in which it must be harvested, but in New Zealand the mills run the year round. In England, there is a machinery which still further improves the value of the fibre. I have seen ropes made from it aboard several American vessels, and the captains expressed a very high opinion of it and wished to see it introduced into the United States. Capt. Friend, of the Barkentine Adele, of San Francisco, informed me he had some canvass made from it, which he obtained in Melbourne, Aus. Once successfully growing in the country and with American enterprise and ingenuity bearing upon the manufacture, I think there is no plant that will so add to the wealth and prosperity of the country.

A. M. SOUTHWORTH.

The Cost of Producing Cotton.*

In our country, and under our present system of agriculture, the question, "What is the cost of producing cotton?" involves nothing more or less than "What is the possibility of remunerative farming?" We have no other crop, which experience has shown to be adapted to our soil and climate, and which we can grow profitably for market. In isolated cases, a farmer, profiting by the neglect or improvidence of his neighbors, may increase the sales from his farm by producing, in excess of his own supply, a limited, quantity of fruit, vegetables, or even grain and forage, and find a market with less thrifty farmers, or with non-producers. But to bring money into the country, or increase the aggregate wealth of the community, we are, at present, entirely dependant upon the successful cultivation of cotton. In view of the present low prices, it becomes then a question of vital importance, "At what cost per pound can it be produced?" or, perhaps, it would be more practical to state it: "At what cost has it been produced?" The answer, from experience, in my own case, is far from satisfactory.

I have found that the hire of labor, cost of fertilizers, expense of maintaining plantation and implements in good working order, and a very moderate allowance for rent of land and use of capital, have amounted to fully fourteen cents for each pound of cotton I have sold in the year 1870, and about sixteen cents in 1869. In this estimate, the whole of the plantation expenses have been charged to the cotton, for, whatever else was produced, was consumed by men and animals engaged in making the cotton, and was, in part, produced for that purpose. The amount of corn, forage and grain made in those years was about sufficient for the plantation animals; that consumed by laborers was purchased, and the cost included in the above estimate. The close of each year left a supply for the same number of animals for the ensuing year, so that these figures may be taken to represent the actual cost of each pound of cotton.

It is worthy of study to ascertain how this cost is distributed, of what elements it is made up, and whether any of them admit of any reduction. It is evident, at first sight, that the most expensive element in the production of cotton, is the labor. The question then is: "What amount of labor have we been in the habit of bestowing upon the production of cotton?" With a view of putting myself in a situation to answer this and similar questions, in the year 1869 I kept a record of all the operations of the farm, showing each day the amount of labor performed in every department of the plantation. A

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* Extract from the Minutes of the Pomological and Farmers' Club of Society Hill, S. C.:

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Resolved, That the Essay of Wm. C. Coker, Esq., be offered to THE RURAL CAROLINIAN and *Southern Cultivator* for publication, and that the Secretary request the editors to call attention to the same.

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JNO. A. WILSON, *Secretary.*

study of this journal has led me to some conclusions, which I would offer with less diffidence if they had been derived from a longer course of the same system of observation. Taking, however, the experience of that as a guide, I would say that three hundred days of effective labor, assisted by one-third of the labor of one mule, are sufficient for the proper cultivation of twelve acres of cotton. This is equal to the labor of one man working efficiently through the year, but it is not distributed through the different seasons of the year so that one man can do it with ease. From January to April he would have some idle time on his hands; from May to August he would require some assistance, and during the picking season still more. This estimate, therefore, will only apply, where it is practicable to hire additional labor at seasons of special need, doing the regular and constant work with a less number of hands than the estimate requires. We have then, as a basis of calculation, twenty-five day's work to each acre of cotton. The cost of a full day's labor, with all incidental expenses, furnishing the laborer with tools, etc., with me has been sixty-six and two-third cents, or if one-third of the cost of feeding the mule is added, eighty cents. This gives twenty dollars per acre as the bare cost of cultivation. Putting the natural production of the land at one hundred and thirty pounds per acre, which is fully up to the average of our uplands, and we have about fifteen and a half cents as the cost of a pound of cotton in the one item of labor. The calculation supposes the whole of the labor to be applied to cotton alone, and consequently everything consumed by man or beast to be paid for. No farm that I know of is conducted on this principle; there is always a greater or less proportion of land planted in other crops, and here the conditions of the problem are very materially varied. I will take that proportion which seems to me to give the best distribution of labor and the best rotation of crops, and say that three hundred days of effective labor, assisted by one-half the labor of a mule, will cultivate eight acres in cotton, eight in corn, and eight in the small grains. It may seem that this is much heavier cropping than the former, and I confess that nothing astonished me more in the study of the farm journal than the extraordinary proportion of labor that appeared to have been bestowed upon the cotton. This astonishment was lessened when I remembered that during the months of May, June and July, and part of August, the entire hoeing force was rarely absent from the cotton field, and during the months of September, October, and November, the whole labor of the plantation, with all the extra help that could be hired, was devoted to picking and ginning, with the exception of, perhaps, two weeks gathering corn and sowing grain.

I am satisfied that to cultivate twenty-four acres thus divided, is really less work than the twelve in cotton alone. The several crops, thus proportioned, while they are not entirely complementary to each other, yet give a much more perfect distribution of labor through the different seasons of the year. Thus, with all cotton, each ploughman has thirty-six acres to plough in the spring, and each hoe hand has eighteen acres to hoe; while under the latter estimate there are only thirty-two acres of cotton and corn to plough, and

sixteen acres of cotton to the hoe hand; this reduction will make room for the time required to harvest the small grain in June. Again, under the former estimate, there is the produce of twelve acres in cotton to be picked and ginned, under the latter only eight acres, which will amply compensate for the labor of gathering corn and sowing grain. The product of these sixteen acres of corn and grain are only profitable to diminish the cost of the laborer. It is impossible to enter into an exact calculation of the extent to which it will do this, so much depends upon the capacity of the soil, and the success which attends the cultivation of these crops, that any calculation would be mere guess work; I can only say that I believe the corn and grain so made, ought to pay the entire cost of feeding the mule, and furnish the laborer with provisions for consumption equal to fully one-half his wages, besides providing against the depreciation of mules, by feeding a sufficient number of colts to keep the stock up to the standard. If this is so, it is easy to see that the actual expenses of cultivating the eight acres in cotton are less than the twelve in the former case.

So far I have spoken only of labor; the question of fertilizers, and how the cost of making cotton is affected by their use, is worthy of study. Here, however, there is a great difficulty in making any accurate calculations on different soils, in different hands, and with different seasons, the results attending their use vary so widely, that it is impossible to reach any definite conclusions, and each farmer can only use his own judgment and experience, to determine how liberally he shall use them, or whether he shall use them at all. It is my own belief that if one hundred dollars worth of good fertilizers, containing the elements of ammonia, phosphoric acid, and, perhaps, potash, be applied all to the eight acres of cotton in the above estimate, the increased product will be more than that amount even at present prices, and the effect will be felt through the whole rotation.

Does Guano Pay?

The question "Does Farming Pay?" in the March number of The Rural Carolinian, suggests another, "Does Guano Pay?" In my judgment, that depends upon circumstances.

When I commenced using guano, I thought all I had to do was to put a little in the ground, and draw out three or four hundred per cent. I was deceived in this, but I have been paid, so far, handsomely, which I propose to show you in a tabular form, as given below, being the result of three years' experience. But I fear, unless guanos get lower in price, or better in quality, the per cent. on investment, in future, will be small. These conclusions are deducible from the tables. The results, detailed in tables one and two, are derived from experiments conducted upon single rows, left unmanured across

fields, two hundred and forty-two yards long, compared with the adjoining ones, which were manured as stated in the tables:

Table No. 1. 1868—Season Good.

Name of Fertilizer.	Cost per Acre.	Yield per Acre.—Lbs.	Increase. Lbs.	Net Profit at 8 cents.	Net Profit at 4 cents.
Peruvian and Dissolved Bones—equal parts...	$10	780	430	$24 40	$7 20
No Manure.....	.....	350	.....	.....	.....

This cotton was sold at 8c., in seed—(25c. in lint.) Twenty-four 40-100 dollars net profit on an investment of ten! I'll "come down heavy," I thought, on Peruvian Guano and Dissolved Bones; and so I did, and here is the result in

Table No. 2. 1869—Season not so Good.

Name of Fertilizer.	Cost.	Yield per Acre. Lbs.	Increase. Lbs.	Net Profit at 8 cts.	Net Profit at 4 cts.	Net Profit at 5 cts.
Per. Guano and Dis. Bones—equal parts.	$10	180	310	$14 80	$2 40	$5 50
No manure	.....	470	.....	.....	.....	.....

This cotton was sold at 5c.—(in seed)—could have been sold for more, but was held too long. The increased yield, in this case, was not so great as in No. 1, which I attributed to the bad season. However, I was not deterred from further investments, and behold the result in

Table No. 3.—1870.

Kind of Manure.	Quantity per Acre. Lbs.	Value.	Yield. Lbs.	Increase. Lbs.	Net Profit at 8 cts.	Net Profit at 4 cts.	Loss at 4 cts.
Phœnix.....	333⅓	$10 00	735	135	$00 80	.....	$4 60
Peruvian.....	200	"	955	355	18 40	$4 20	.....
Phœnix ¾, Peruvian ¼....	285	"	910	310	14 80	2 40	.....
Peruvian Guano and Dis. Bones—equal parts.....	236	"	845	245	9 60	.....	20
Dissolved Bones.....	291	"	795	195	5 60	.....	2 20
Wando	296	"	825	225	8 00	.....	1 00
Carolina.....	296	"	880	280	12 40	1 20	.....
Mapes'.....	296	"	845	245	9 60	.....	20
No Manure.....	.....	....	600	.....	.....	.....	.....

This table of experiments was made upon the same ground as No. 2, at least, by the side of it, not including the unmanured rows of No. 2, and was instituted for the purpose of ascertaining the comparative value of the different fertilizers used.

The land was gray, with red subsoil. Everything was done with the strictest accuracy, under my own immediate supervision. I am astonished at the result. I thought I was going to show guano doubters a demonstration, but lo! I am laughing out of the other corner of my mouth.

The cotton was sold at 4c. per pound, (in seed), or 12½c. for lint. The column, net profit at 8c., was put down to show *what it might have been*, but what it was not.

Observe, 1st. I lost money on five out of eight; and in one case, $4 60 on an investment of $10, and in the whole number 40c. on the $80 invested.

Observe, 2d. The three last that did pay, paid hardly 80c. on an investment of $30, which does not include hauling ten miles, interest, and cost of application!

But, says one, your experiment is not a fair one. You ought to have tried it upon ground that had never been manured before; and so I ought. So far as the value of the different manures is concerned, as compared one with another, I think the table correct. Lest the guano in Table 2 increased the yield in "no manure" of No. 3, let us see how the matter stands with Peruvian Guano and Dissolved bones for the two years.

Profit, No. 2, at 5c.—$5 50. Loss, No. 3, at 4c., 20c., or $5 30 for two years on $20 invested. With cotton, at 12½c., (or 4c. in seed,) for both years, the profit—$1 10, *and that for two years.* For the three years, actual profit Peruvian Guano and Dissolved Bones, $29 70, or about 100 per cent. But recollect, nearly all of that was made in one year with cotton at 8c. Had all the cotton been sold every year at 4c., the profit for the three years would be $9 40.

To answer the question, then, "Does Guano Pay?" I refer to the above figures. With cotton at 25c. it will; at 12½c. it will not.

Spartanburg, S. C. THOMAS J. MOORE.

[Our correspondent's answer to the question, "Does Guano Pay?" is the correct one in his case, and will apply to many others, but another man's experience may furnish a different one. With one, it does not pay to grow cotton at all at twelve and a half, or even at fifteen cents a pound, but another, more skilful, or more fortunately situated, may make something even at the lowest of these figures.—Ed.]

Some of Our Mistakes.

"Under which king, Bezonian?
Speak or die."

We believe that the public mind has pretty well settled down to the conviction that farming, at the South, cannot be conducted profitably, aye, *tolerably*, without the aid of improved culture and commercial fertilizers. Essays upon the collection of muck, ashes, lime, salt, cotton seed, etc., to make mountains of compost, with very little labor or expense, look very well upon paper, but any man of common sense will see, in a moment, the difference between a dense and a sparse population—a market garden and a plantation.

The experience of five years has taken the starch out of all our high farming notions; and we have come to the conclusion that our only hope

lies in contracting the area of cultivation, cutting down the corn patch, and filling the deficiency with oats, barley, and the grasses, raising our own stock and supplies as much as possible, keeping *out* of debt, paying as we go, and making the greatest amount of cotton upon the smallest area of land.

We have been running the machine all wrong. Our aim has been to grow rich by devoting all our energies and resources to the production of cotton. We have grown daily, as a people, poorer, while our labors have enriched the very people who have riveted the chains upon us.

Our efforts should have been directed to the improvements and comforts of life first, and the production of cotton afterwards. We have been infatuated with the idea that the cotton crop would restore the equilibrium—never was there a greater mistake. We have been tickled with the Northern palaver about restoration of the South, Southern prosperity, and all that, by the cotton crop, and annually seduced into the road to ruin. Are we going to try it again? During the last few weeks we have travelled over a large portion of the State. The corn cribs are nearly all empty, the farm animals in bad condition, few cattle, fewer sheep, and no hogs. The fences are all down, the inside lines have been moved out to repair the outside ones; the farm buildings are dilapidated, and everything indicates that we are on the broad road to ruin.

With all this, at every depot, from Charleston to the mountains, we see Western corn, and smell Western bacon and commercial fertilizers. Is there any man so blind as not to see where we are going at a killing pace?

But, to return to our subject, for we have allowed our feelings to take us off the track.

Improved Culture!—We have been too fast, too ready to adopt every new fangled notion that was to save work. We should have been more cautious. Improved implements are only adapted to intelligent labor, and to soils prepared for their use. We must begin by degrees, and our own ingenuity must be called to our assistance to work out the problem.

A very good beginning has been made, and we have hopes, on that point, of success. Deeper culture, in the way of preparation, is necessary, but the benefits depend upon so many contingencies, that every man must judge for himself how far he can afford to go.

Commercial Fertilizers.—The zeal with which manipulators have entered into this business, and the amount of advertising and drumming, prove that there is money in it to one party at least. The general disappointment of planters as to the profit arising from the free use of fertilizers during the last season, and the diversity of opinion that exists as to the quantity which pays best, the mode of application, the effect of seasons, mode of culture, and all that, have invested the subject with a good deal of ambiguity; and it is high time that people should begin to weigh the evidence before going deeper into the business.

It is as important to the honest dealer or manufacturer of fertilizers, that frauds should be exposed, as to the planter. Where the demand is great, the

temptation to adulterate will always exist; and, doubtless, there has been enough of it. But an experience of many years has convinced us that it is only upon certain soils, and under certain contingencies, that commercial fertilizers will pay. We have never seen much benefit from their application to heavy clay soils, deficient in sharp sand. This is the uniform experience of every planter of our acquaintance. Nor have we known them successfully applied on soils deficient in vegetable matter.

In looking over the testimonials (and it is to be presumed they have selected the most flattering) of the Wando, Etiwan, and Carolina fertilizers, it will be found that the success has been almost invariably upon light, sandy soil, with a cold clay subsoil, and on soils where vegetable matter was abundant. A careful study of these certificates cannot fail to open one's eyes to the importance of soil in the use of fertilizers; and we would like very much to have this subject fully ventilated *pro bono publico.* * * *

The Profits of Beet Culture.

An acre of beets will cost no more to produce than an acre of turnips, the culture is the same, and also the manure and labor of sowing, hoeing, and harvesting the crop; the singling the beets may be a little more troublesome, but the advantages in not suffering from fly and the quick growth of the plant to smother weeds, far more than make up for that difference. Beets may be sown later and harvested sooner than turnips.

If ten tons of properly-selected sugar beets can be raised on an acre, they are worth, delivered at the factory, (say within three miles,) four dollars per ton, or forty dollars per acre.

An acre of fall wheat at thirty bushels per acre, (and who would not be glad to be sure of that amount of crop,) at one dollar twenty-five cents per bushel, will produce thirty-seven dollars and fifty cents. An acre of barley, at forty bushels per acre, and at eighty cents, will produce thirty-two dollars.

So that an acre of sugar beets, taking every contingency into account, is worth as much, to say the least, as an ordinary crop of any other farm produce. And in addition, if the farmer works the crop up into syrup, he may be certain of realizing fully as much more, or eighty dollars per acre, exclusive of the wear and tear of sugar utensils, fuel and labor. The refuse is supposed to be fed on the farm, and this worked into manure, and the value of it is not taken into account in either case.

Now it appears from the returns of the Patent Office at Washington, ("Report of Commissioners of Agriculture, 1868,") that the average production of a crop of cotton in the United States, is only equivalent to fifty-six dollars twenty-five cents; the proceeds from an acre of tobacco to sixty dollars; and on both these crops the labor is immense, and, as they say, never ending.

These assertions are not speculative, but are given on the basis of actual experience by a writer in the *Canada Farmer*, and apply to a region where the advantages for the cultivation of the root are much less than here in our milder climate.

In Europe, where the sugar beet is grown, the number of cattle is continually increased, and their manure is more and better than can be obtained where ordinary farming is pursued, the beet-root cake being the best possible food for cattle, especially milk cows.

Facts about Rice.

It is stated in "The Natural History of Commerce" and is a well known fact that the rice from the Southern States of America is decidedly the best, being much sweeter, larger, and better coloured than that from Asia, where its cultivation is not so well managed. It is necessary to except Bengal rice, which now nearly equals that grown in the Carolinas. South Carolina produces the best American rice, and Patna the best East Indian variety. Excellent rice is also grown in the Spanish provinces of Andalusia, Valencia, and Catelonia, as well as in the marshes of Upper Italy, especially Lombardy and Venice, and in the plains of Milan, Mantua, Verona, Parma and Modena, along the river Po. Most of the rice used in England comes from the British and Dutch East Indies *via* Calcutta and Batavia, and from the Carolinas, Brazil, and Egypt. The Brazilian comes into commerce from Rio Janeiro, and the Egyptian (500,000 cwts.) from the Delta of the Nile, *via* Damietta and Rosetta. Immense quantities of rice are consumed in England, in the form of puddings and confectionary. The straw is plaited for bonnets.

Rice paper is not manufactured from this grain, but is the pith of a shrub called by the Chinese "Tacada," and by botanists *Aralia papyrifera* (*L.*) The pith, carefully removed from the stem of this plant, is first cut spirally with a sharp knife, then unrolled, spread out, and pressed flat. This paper is much used by the Chinese for water-color paintings of insects and flowers.

Rice, although regarded by us more as a cheap luxury than a necessary article of food, forms the chief subsistence of the Hindoos, Chinese, Japanese, and other eastern nations. The Burmese and Siamese are the greatest consumers of this grain. A Malay laborer requires 56 lbs. monthly, but a Burmese or Siamese 64 lbs. The mountain rices of India are grown without irrigation, at elevations of 3000 to 6000 feet above the level of the sea; the dampness of the summer months compensating for the want of artificial moisture. Rice in the husk or rough rice is sometimes called by its Indian name "Paddy." Before it can be used for food this husk must be removed. This is done in India amongst the poorer people by rubbing the grain between flat stones, and winnowing or blowing the husks away.

The cultivation of rice undoubtedly dates from the oldest periods of which we have any historical record. Ecclesiastes xi. i., "Cast thy bread upon the waters; for thou shalt find it after many days," evidently applies to rice, which in Egypt is always sown whilst the waters of the Nile still cover the land, the retreating floods leaving a rich deposit of thick alluvial silt, in which the rice vegetates luxuriantly. A spirituous liquor (*arrack*) is distilled from rice.

The Los Angeles News says that the raising of castor beans is attracting something of attention hereabouts. Several farmers, who last season cultivated a few acres, have met with results that have been eminently satisfactory. In this section the crop must undoubtedly prove a profitable one. The plant will thrive upon soils that are too dry for many other products.

Patrons of Husbandry.

A few noble-minded men, after much consultation and serious thought on this great subject, have condensed into a brief and simple formula of rules and regulations, certain leading principles and ideas, perfectly in consonance with rural economy and pursuits, sublime in their conception, and social and elevating in their tendency, not conflicting with the moral, social, religious or civil duties of any. And that the organization may not be taken advantage of or abused by the unworthy, it is made secret in some of its features; it embraces in its membership both sexes, and excludes none that are worthy of good society. Its principles and teachings are elevating and refining, tending to the developement of high moral principles and all the better passions and feelings of our nature. Kindly fellow-feeling and charity are leading features. Nothing unjust or uncharitable toward other organizations or classes is tolerated, while it is *peculiarly and emphatically the farmer's institution.* Its primary organizations consists of not less than thirty members each (male and female) called *Granges.* These are represented in a State Grange, and State Granges are represented in a National Grange.

Thus you see the plan is not only comprehensive, but complete, embracing our whole country on the representative principle.

Now, brother farmers, here is just the thing we want—an organization adapted to our circumstances; easily gotten into operation; republican in principle; representative in form, and entirely practical in character. It promotes our interest as a class (without prejudice to others,) encourages intellectual development, elevated moral principles, and true benevolence or charity. Will you avail yourself of its advantages?— *Coleman's Rural World.*

Department of Horticulture and Rural Art.

Garden Crops in Summer.

Any good Southern garden, managed with merely a tolerable degree of skill, industry and care, will furnish an abundant supply of vegetables during the spring. Radishes, lettuce, turnips, cabbages, beets, carrots, asparagus, green peas, snap beans, Irish potatoes, sugar corn, and other esculents are abundant and excellent. In the fall—which is like a second spring with us—we can commence anew, and need not lack "garden truck," of one kind or another, from October to May. June, however, generally brings hot, dry weather, and a sad change comes over our horticultural prospects. Our radishes become tough and too highly flavored, our turnips stringy and bitter, our lettuce runs up to seed, and our cabbages refuse to head, and are eaten up by worms, or destroyed by lice. Peas fail entirely, and beans, except those of the Lima family, partially. Irish potatoes, especially on sandy soil, rot in the ground. Tomatoes grow, and bear finely for a while, but even they, as the heat and drouth increase, gradually fail, and too often the whole garden is given up to crab grass and weeds—a crop that can be

grown in spite of burning suns and brazen skies. In brief, it is considered useless to try to have a garden in the South during the summer. This notion is entirely erroneous, and should not be entertained by any well informed horticulturist. Acting upon it deprives us of many articles of diet which are not only delicate luxuries, but are also conducive to health.

It is true that there are some of the spring and winter vegetables that it will not pay to attempt to grow during the summer. We must dispense with green peas. Turnips, radishes, and lettuce, if grown at all, will be of poor quality. Cabbages, if planted out on low, moist ground, may succeed, if they can be protected from insects, but we can hardly recommend the trial. Still, we can have a summer garden and better crops than crab grass.

Where it is possible, a garden should slope toward a stream, or a low tract of land, so as to have a moist as well as a dry portion; but the situation only occasionally admits this. In any case, the ground for a summer garden must have *a deep, thoroughly broken up soil.* Two feet in depth is not two much, and nothing less than eighteen inches should be considered admissible. First, then, a moist soil, if possible, and, at all events, a deep, well pulverized one.

In the second place, no crude unfermented manures must be used. Good composts composed largely of well rotted vegetable matter, may be applied in any quantity that may be required, adding, or applying separately, wood-ashes, plaster and salt. These help the soil both directly, as manures, and indirectly as absorbents of moisture, and the more vegetable matter you have incorporated with your soil, if thoroughly decayed, the greater will be its capacity to absorb and retain water.

The next consideration, and a most important one, is *shade for the ground.* This is best obtained by *mulching*—that is by covering the soil between the rows and closely around the plants with hay, straw, half-rotted leaves, pine straw, or any convenient vegetatable trash. This mulch should be several inches in thickness, and will not only prevent the rapid evaporation of moisture and the reflected heat from the ground, but will also prevent the close packing and baking of the soil, from the beating rains and the hot sunshine which follows them. This mulching should be done while the soil is still moist. With heavy mulching the Irish Potato crop may be saved, and can be dug as wanted, far into the summer, and the earliest planted tomatoes, often kept in bearing nearly the whole season. It may be applied with profit to nearly all crops, but especially to those most liable to be injured by heat and drouth.

Now let us see what we may have in the garden during the hottest and dryest part of summer. Snap beans, with the treatment we have recommended, may be kept in a tolerably productive condition all summer, planting about once in every two weeks. Lima and Sieva or Carolina beans should never fail till frost. Other pole beans will not be needed. In place of both turnips and cabbages, the kohl-rabi, planted between the rows of corn, or some other tall-growing crop, to give partial shade, will do tolerably well for

the greater part of the season. Okra and "roasting ears" need never be lacking. Carrots and beets will not fail altogether in the deep well mulched soil. Tomatoes will hold out till frost; squashes, (varieties that resist the vine-borer,) cashaw pumpkins, cucumbers, melons, and other things, (for we cannot mention all,) help to fill up the list. Can we not have summer gardens in the South? Extraordinary drouths excepted, we believe we can—indeed we *know* from personal experience. Try it this season.

Cultivation of the Fig, and its Preparation for Market.

For several years my attention has been particularly directed to the fig. It being easy to cultivate, and very prolific, I believed it might be made one of our most profitable crops. I have continued my experiments, until I have succeeded in preparing the fig so as to resemble the imported fruit, both in appearance and flavor, and shall plant largely, with the intention of drying the fruit for market.

The fig can be readily propagated, both in the spring and fall, from cuttings and layers. When the terminal bud begins to swell in the spring, is the best time to put out cuttings. They should be eight to ten inches long, the lower part being cut close below a bud, as that is the point from which the first roots put out. In planting, choose a rich spot of ground; place the cuttings in a slanting position, leaving one or two buds out; press the soil close about them; water, and mulch with grass or pine straw; shade with a palmetto leaf, and continue this shade after they begin to grow, especially throughout the rainy season, as there is danger of their scalding. The following spring they may be transplanted, to make a permanent orchard. Continue a partial shade the second year. Layers, when transplanted, should also be shaded. The proper distance to place the rooted plants will depend upon the richness of the soil and kind of fig. If planted on common land, fifteen feet will do. I have trees twenty feet apart, and the limbs interlock. I have one tree that covers a diameter of twenty five feet.

The fig requires a considerable amount of potash and lime. A dressing of muck, composted with ashes and lime, will furnish the necessary mineral and vegetable food. The second year, some of the plants will probably fruit. It is often the case, that all the powers of the plant are concentrated in the formation of wood, and no fruit is produced; it then becomes necessary to stop the excessive growth of wood, which is done by root pruning—cutting all the roots in a circle half the length of the branches. This should be done in the winter. Avoid much pruning, unless you wish tall trees. The more you prune, the less fruit you obtain.

The preparation of the fig for market is so simple that any family, having the trees, can succeed. They require no sugar or syrup; as the fruit dries it forms its own sugar. The greatest trouble is in gathering. If picked by hand it will be found a tedious process. The best plan is to hold a sheet

under the tree, then shake the tree hard enough to make the ripe fruit fall. Do not place the sheet upon the ground, as the ripe figs will burst open and be ruined for drying. Prepare a bath of strong ley that will swim an egg, have this near the boiling point. Put the figs in a basket, dip in the ley for two minutes, then dip in clear water. The reason for putting them in ley is to destroy the acrid gum in the skin, also, to change the color of the purple fig; let the fruit drip a short time and they are ready for drying.

If dried in the open air, hurdles should be made with narrow slats, upon which to place the fruit. Keep in the sunshine. The second day you can flatten the fig by pressing them with the hand; the hurdles, with the fruit on them, must be placed under shelter at night, or when it rains. An objection to drying in the open air is, that a fly lays eggs in the fruit, and in a short time they become wormy. This can, however, be obviated by heating them in an oven or stove, just hot enough to destroy the vitality of the egg, but not hot enough to candy the fruit. It requires a little practice to know when the fruit is dry; it should be soft enough to pack close in a box with moderate pressure; they keep much better packed close, and are freer from the attack of insects.

The boxes should contain from ten to fifteen pounds. Use oak, cypress, or gum, as pine will impart a turpentine taste to the fig.

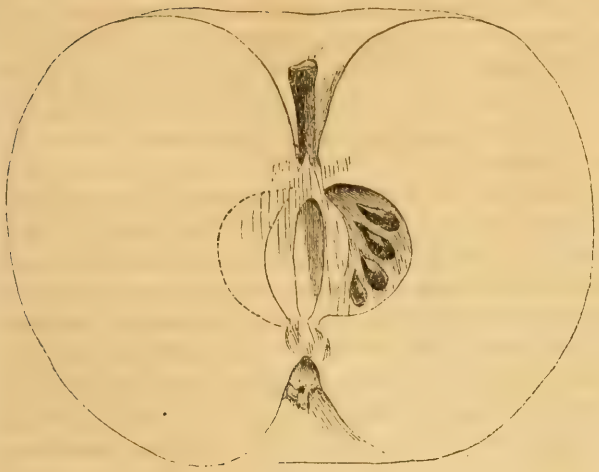
The best and most expeditious plan is to erect a drying-house, the size of which will depend upon the extent of the orchard. The drying-house described in The Rural Carolinian for May, 1870, is a good one. Where plank is scarce, a house can be built of logs, five feet by ten feet, and six feet high. Face both sides of the side logs, so as to leave a space of three inches between each; when the logs are put up, let these spaces begin two feet six inches from the bottom. Make an arched, clay or brick flue through the house lengthwise, smoke tight, with a chimney at the end outside; thick stove pipe can be used for a flue. Put slats across the ends and centre of the house. Make frames half the width of the house, to fit the openings in the logs, across the bottoms of these frames or drawers, make a latice of palmetto stems, upon this place the figs, keep up a moderate fire; in twenty-four to thirty six hours the fruit will be dry. Be careful not to have too great a heat, for it will darken the fig, give it a syrupy taste, and injure the market value. In building the house put a tight roof on, and daub all the cracks with clay.

Z. H. MASON, M. D.

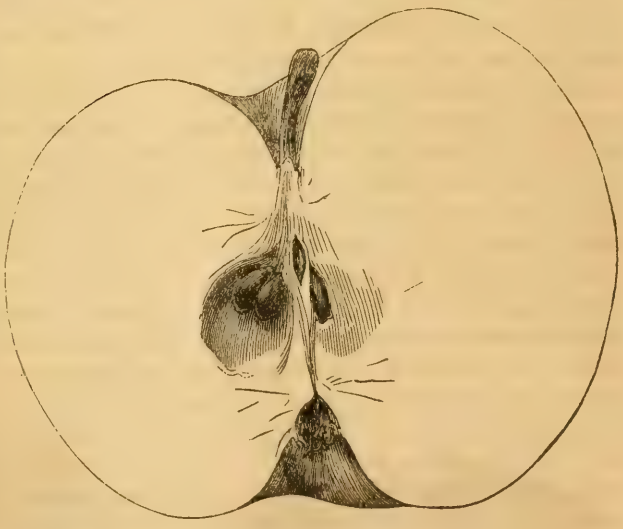
Apopka, Orange County, Fla., March 13th, 1871.

Grape Growers Maxims.—1. Give the vine plenty of manure, old and well decomposed; for fresh manure excites growth, but it does not mature it. 2. Luxuriant growth does not always ensure fruit. 3 Dig deep, but plant shallow. 4. Laterals are like politicians; if not checked they are the worst of thieves.

Two Good Winter Apples.



1. *Magnum Bonum.*—This is a medium sized apple, of excellent quality, and a good keeper; shape regular, slightly conical, stem small, in a narrow cavity; color green, nearly covered with dark red stripes; flesh yellow and firm.



2. *Mountain Belle.*—The Mountain Belle originated among the Indians in Habersham County, Ga., and was introduced by Mr. J. Van Buren, of Clarkesville. Size, medium to large; oblate, conical, color, an orange ground, shaded and striped with red; stem, rather short, in deep cavity; calyx in moderate sized basin, flesh white, hard and juicy, flavor, sub-acid; quality, fair. It is famous as a late keeper.

On Employing a Gardener.

Here is some excellent advice from the inimitable pen of "Ike Marvel," which we commend to those who have the means to enjoy such a luxury as a large garden and a man to "keep and tend" it.

First if your notion of country enjoyment is limited by thought of a good place where you may lie down under the trees, and frolic with your children, or smoke a pipe under your vine or clambering rose-tree at evening—find a gardener who is thoroughly taught, and who can place upon your table every

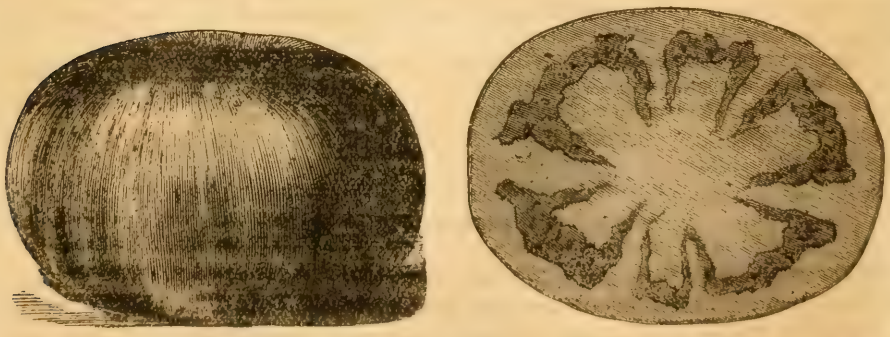
day the freshest and crispest of the vegetables and fruits of the season, leaving you no care, but the care of bills for superphosphates and trenching. If you stroll into his domain of the garden, take your walking-stick or your pipe there, if you choose— but never a hoe or a pruning knife. Joke with him, if you like, but never advise him. Take measure of his fitness by the fruits he puts upon your table, the order of your grounds, and the total of your bills. If these are satisfactory—keep him; if not, discharge him, as you would a lawyer who managed your case badly, or a doctor who bled or purged you to a sad state of depletion.

If on the other hand, in establishing a country home, you have a wish to identify yourself with its growth into fertility and comeliness, in such sort that you may feel that every growing shrub is a little companion for you and yours—every vine a friend—every patch of herbs, of vegetables, or of flowers, an aid to the common weal and pleasures of home, in which you take, and will never cease to take, a personal interest and pride—if all this be true, and you have as good as three hours a day to devote to personal superintendence—then, by all means, forswear all gardeners who come to you with great recommendations of their proficiency. However just these may be, all their accomplishments, ten to one, will be only a grievance to you. It is far better, if you be really in earnest to taste ruralities to the full, to find some honest, industrious fellow—not unwilling to be taught—who will lend a cheerful hand to your efforts to work out the problem of life in the country for yourself.

In short, whoever is serious about this matter of taking a home in the country (if his rural taste be a native sentiment, and not a whim,) should abjure the presence of a surly master in the shape of a gardener, who can tell him how the Duke of Buccleugh (or any other) managed such matters.

God manages all of nature's growth and bloom in such way, that every earnest man with an observant eye can so far trace the laws of His Providence, as to insure to himself a harvest of fruit, or grain, or flowers. And whatever errors may be made are only so many instructors, to teach, and to quicken love by their lesson.

Cedar Hill Tomato.



A correspondent writes, that this has proved with him the earliest and best kind he has tried, and continues longer in bearing than most others. We grew it last year, but the season here was not favorable to the tomato,

and no variety proved wholly satisfactory. We shall test the Cedar Hill again this year, by the side of many other sorts, new and old, and hope to be able to give a more definite report than we are able to at present. It is very smooth, handsome and solid, as our illustrations will show.

Three Crops in one Season.

Mr. Peter Henderson, in the *American Agriculturist*, gives an interesting sketch of a successful truck farmer, who made three crops in one season, *in New Jersey*. What a lesson for us! If three crops can be made in one season in New Jersey, shall we be content with *one*, and often a poor one, in South Carolina or Georgia? Mr. Henderson says:

I had almost thought that I knew all about market gardening in this vicinity, that was worth knowing; but a successful experiment, made last fall by one of my neighbors, John Reilly, proved to my sasisfaction that I was not yet too old to learn. The neighbor in question is an old foreman of mine, who cultivates about eight acres, in the way usually practiced here: first, planting the spring crops of early cabbages, beets, lettuce, onions, radishes, etc., which, being sold off by July, the land is again planted with the second crop, which is usually celery. This is all that we have been requiring of the soil, to give us two crops in one season. But this neighbor of mine is a man of more than ordinary shrewdness, and a close observer; he saw that the long-continued drouth of last July and August was certain to seriously impair the fall cabbage crop, and that the consumer in consequence would pay high for a substitute. He knew that an excellent substitute was spinach, but his small farm of eight acres was already planted with celery or other fall crops, and no other land rich enough to grow the spinach was accessible. He also saw that the drouth that was destroying the cabbage crop left the celery but little larger in September than when it was planted in July, and the three feet of space between the rows of celery were left uncropped; this suggested that a row of spinach might be sown between each two rows of celery; at any rate, it might be worth trying.

Twenty pounds of seed were procured, and about six acres of the ground planted with celery were sown with spinach. Mr. Reilly told me that the experiment netted him $1,500 clear of all expenses, and that, too, without detriment to the celery crop.

The spinach was sown September 1st, and was all cut off, and marketed in six weeks from the time of sowing, which gave yet ample time to do the work on the celery crop. I have not the figures giving the profits of the three crops per acre, but judge it to be not less than $1,000 in the hands of Mr. Reilly.

A Good Fruit Country.

A correspondent of the Agricultural Department, writes from Jackson Co., North Carolina, as follows of the Blue Ridge region of the South:

The Blue Ridge at its great southern bend runs nearly east and west for one hundred miles, nearly coinciding with the thirty-fifth parallel of latitude. It here forms a huge mountain wall, in many places six thousand feet high. This great wall is braced on the south side by many lateral ranges, running down between the heads of the rivers, thirty or forty miles in extent. Some

of the knobs on these side ranges, nearly equal in height the parent mountain. The soil on the top and east side of many of these mountains is a loose and fertile loam, abounding in springs and rivulets of pure water, and clothed in forests of excellent timber. The greater part of this country is yet in a state of nature, and the lands are cheaper than the Government lands of the West. Railroads already built and in process of construction run along the lower spurs of these mountain slopes, sometimes tunneling through them, giving easy access to the markets of the world.

The climate is delightful; the great mountain wall on the north breaking the force of the cold storms of winter and spring, and its great elevation exempting it from the burning heats of summer. Here is the country for the man of weak lungs; and if he has a turn for vine-growing, sheep-husbandry, or bee culture, he may obtain health and money at the same time. I know of no country that can surpass it in climate, unless it be the south of Spain, under the Sierra Nevada, or some parts of Lombardy, in Italy.

Among many desirable localities, from the Tryon Mountain, in North Carolina, to the Yonah, in Georgia, I would designate the Oconee Mountain, in South Carolina, as possessing peculiar attractions. First, a highway of easy and gentle grade to Walhalla, a German town on the railroad. Second, an elevation of about eight hundred feet above the valleys, and perhaps sixteen hundred feet above tide-water. Third, a level and fertile mountain top of hundreds of acres, with springs and rivulets everywhere. Fourth, a rich and steep mountain on the east side with thousands of acres of sunny and shady slopes, giving every kind of exposure except a western one, with magnificent forests of oak, walnut, poplar, locust, pine, and bass wood. Fifth, the site is beautiful. Looking north, we behold a huge mountain for one hundred miles, in winter covered with snow or sleet, and in summer in gorgeous green; looking south the hill country of South Carolina, lies spread out like the billowy waves of the ocean far as the eye can reach; a few miles above, the climate is too cold for Indian corn; a few miles below, grow the cotton, fig, and rice. Sixth, the almost certainty of the grape being healthy there. A mountaineer here and there has planted a few peach trees about his house, and an Isabella or Herbemont vine. No frost has ever killed his peaches, or rust or mildew destroyed his grapes.*

The Cultivation of the Almond.

Our readers are probably aware that the almond belongs to the peach family, (*amydalus*) and, according to Dr. Charles A. Lee, who ought to be good authority, is quite as hardy. An almond orchard, then, as easily cultivated and as hardy as a peach orchard, would be a very money-making addition to the farm. The trees produce, on an average, twenty pounds of nuts each, and are sold at twenty-five cents a pound, wholesale. The mode of planting and culture is precisely similar to that of the peach. The soil

[* A letter of Hon. G. Cannon, of Spartanburg, South Carolina, directed to Senator T. J. Robertson, in presenting the advantages of the Cincinnati and Charleston Railroad, refers to this subject as follows.—Ed. Rep.]

"This line passes directly over the Tryon Mountain, where, in certain localities, frosts have never been known by the oldest inhabitants. Fruits of all kinds never failing, and the wild grapes have been gathered there in the month of January, fresh and juicy as in October. This mountain region also affords wonderful grazing advantages, besides producing all the cereals, common to this climate, in great abundance."

should be, for each, dry, sandy or calcareous, and of considerable depth. It is much better to plant the nuts where the trees are to stand. I would suggest 20 feet apart in a field, and to cultivate the field in corn for several years after planting. They are cultivated exclusively in California, even in the Northern portions of the State where the frosts are quite severe. The peach crop is often destroyed by frost in this latitude, and yet we consider it a paying crop. The almond would be much more profitable, for it is not near so perishable as the peach, and commands a much higher price.

Labor, both North and South, is becoming more costly, unreliable, and even unattainable. Therefore, it is a matter of great importance to our land owners to put their lands in crops requiring but little labor. Small grain and orchard culture ought to be the rule. Orchards of almonds, filberts, walnuts and chestnuts, as well as peaches, apples, plums and cherries.

Almonds possess one very important quality which is not generally known. By pounding and mixing with water and straining, a beverage almost precisely similar to the sweetest and richest (cow's) milk may be obtained. "Cream even separates from this milk, which may be converted into butter." (Webster's American Family Cyclopedia, page 501.) Thus should the rinderpest, that threatening evil, destroy all of our cattle, our almond orchards would afford us a superior and abundant supply of milk, cream and butter.

Rees' Cyclopedia, in a recipe for preparing milk of almonds, gives the proportions as one ounce of almonds to one quart of water. And as the trees, fully grown, average twenty pounds per tree, half of which we may estimate as shell, we may expect 160 quarts of milk to each tree. In nutritious properties, it is said by chemists to be fully equal to cow's milk, and has also fine medicinal properties, being a valuable remedy for heartburn, acidity, etc. It becomes acid by age, but never rancid.

The varieties advertised by our nurserymen are the Sweet Hard Shell, most hardy; Ladies' Thin Shell, for the South; Sultana or Paper Shell, for the South; Great Fruited, Macrocarpa, hardy.

The delicate varieties should be planted where the first rays of the winter's morning sun will not strike them, for it is now well ascertained that sudden thawing is the main cause of injury from a severe frost. It was formerly thought that peaches could not be successfully grown in the mountainous regions of Virginia, but the farmers have found that by planting them on protected hill slopes, where the morning sun will not strike them, they can grow splendid fruit, and the market towns of the Valley are now abundantly supplied with peaches of fine size and quality.

A belt of evergreens on the south side of a peach or almond orchard would effectually protect them from this sudden thawing in our latitude. We earnestly hope that the time will soon come when our farmers will wake up from their present lethargic indifference to their own interests, and find that hoed crops are not their only sources of revenue.—*Southern Home.*

Novel and Curious Vegetables.

The Thorny Melon.—In a tract of country in the southwestern part of Africa, distinguished for its dry but rich soil, the *Boston Journal of Chemistry* says, a gigantic perennial melon has been discovered, which is a most delicious, wholesome fruit, and which is largely consumed by the native inhabitants as food. In order that this melon may flourish, it is necessary that it should strike its roots down through the sand *thirty* feet to reach permanent moisture. This it does, and grows in great luxuriance where all else is shrivelled and parched by heat. But this is not all. If it were simply a huge melon, with smooth and delicate skin, every one would be destroyed by wild beasts before half matured. To prevent this, nature has armed its outer rind with a covering of long, sharp, terrible thorns, which so lacerate the mouths and noses of animals, that they are glad to leave them alone in all their tempting freshness. Man, with his hands and sharp knives, finds little difficulty in opening the luscious fruit. The natives have no necessity for putting fences about their melon patches, for the plants are self-protective.

A New Oil Seed.—A new form of oil seed has lately been exciting the attention of experts. These are supposed to have come from Mozambique, although shipped from Lisbon, and are said to be seeds derived from the *Telfairria pedata*, a tall, climbing, cucurbitaceous plant, a native of the coast opposite Zanzibar. These seeds look somewhat like almonds, and are flat, nearly circular, and about one and a half inches across. The kernel is about the color and hardness of a Brazil nut, and contains a large quantity of oil, said to be equal in many respects to olive oil in excellence. The fruit is very large, and is stated to contain as many as 250 seeds.

The Japan Pea.—The Japan Pea (*Loja hispida*) is an erect, rough, hairy annual plant, with a strong woody stem, growing from two to four feet high, and branching heavily near the ground. The leaves are in three parts, and very nearly resemble those of the common bean, while the seed pods are short, woody and hairy, containing from two to three peas each. They set very thickly along the branches, and to their woody, hairy and uninviting exterior we attribute the non-interference of weevils. There are two kinds, the red and the yellow. It requires the whole of the season, even in the Southern, Atlantic and Gulf States to mature its seeds.

Horticultural Miscellany.

THE GOLDEN JAPAN LILY.

From past experience, (A. S. Fuller says,) we are inclined to think that this magnificent lily will do better here than it does in its native country, and our reason for thinking so is that our bulbs of two years' growth are larger than any imported ones that we have seen. The soil in which we grow our lilies is a deep sandy loam, thoroughly enriched with old and well rotted manure.

If the English gardeners cannot get good bulbs of *L. Auratum* from Japan, they may send to America for them, as they will soon be abundant and cheap.

THE GINKGO TREE.—SALISBURIA ADIANTIFOLIA.

This tree is a native of the Island of Niphon and parts of China. In its native habitat it is said to be a rapid grower, and to attain to a great size, like the Walnut tree, but more conical in its outline. The leaves, which are its principal beauty, are of a triangular, or wedge shape, and of the same color and texture on both sides, and disposed alternately, like the branches; they are smooth and brilliant, of a fine light or yellowish green hue, and ribbed in numerous parallel lines, lengthwise of the leaf, instead of like the leaves of other deciduous trees, which are ribbed from a single centre rib. These leaves, too, being attached by long slender stalks, tremble in the breeze, not unlike the aspen. The tree produces a fruit or nut, having somewhat the flavor of the almond, which in Japan is much prized, according to Kæmpfer, being never omitted at entertainments, and entering into the composition of numerous dishes.

WHEN TO PRUNE TREES.

We read (the *Germantown Telegraph* says) a great deal about the proper time of pruning trees, and especially the apple-tree. Some prefer fall, some mid-winter, some spring; but scarcely one recommends the very best time, in our humble opinion—mid-summer. Doubtless some old fogies will open their eyes and hold up their hands at such an innovation, and denounce it as an absurdity; but we think we will be sustained by a majority of the live men of the day.

If we desire to improve the form of a fruit tree, and get rid of some of the superfluous wood, we should prune in winter; but if we desire fruit, and a perfectly healed stump, we should prune from the fifteenth of June to the twentieth of July. We have done this often with the happiest results. The fruit buds form after this, and the operation suddenly cutting off its growth, produce buds; while the winter or early spring pruning will produce only wood.

In pruning ornamental trees in mid-summer, the bark, instead of receding from the stump, grows over it, and in a few years will completely cover it, and make a perfect amputation.

We have noticed this upon our own premises, as well as upon those of others, many times. This pruning is done when the tree is taking its mid-summer "siesta," and then wakes up, refreshed for another start, and the bark gradually steals over the stump as if ashamed of the shabby looking exposure.

When the tree is in full leaf, and presents its full form to us, we can see exactly where the pruning should be done, in order that while the over-growth may be removed, the symmetry of the tree may be preserved. Espe-

cially is mid-summer pruning to be preferred, first, to produce buds on fruit-bearing trees, as before stated; and, second, when large limbs are to be removed.

THE RED CURRANT TOMATO.

A correspondent of the *Vermont Farmer* commends this novelty in the highest terms. We have not seen it in fruit, but have it now growing, and will report concerning it in due time; meanwhile the Vermonter's description may be interesting:

In two regular rows, on simple or branching racemes, from six to eight inches in length, are borne from twenty to forty smooth, round, scarlet fruit, about the size of our largest currants. The foliage is much more finely cut than in the ordinary varieties, and the stems are slender and sub-climbing. I grew a plant last season, beside a rough wall, and its numerous branching stems attained a height of six or eight feet, completely covering the wall, for some extent, with its delicate spray, profusely interpersed with long, drooping clusters of scarlet berries. Indeed, as an object of adornment, it might fill the place of an ornamental climber with good effect, attracting attention by the beauty and novelty of its fruit. It may be used with satisfaction to drape rock-work, rustic trellises, etc., requiring scarcely better support than we must give the tall nasturtiums.

But, for purposes of utility, it is hardly surpassed by any other kind. Its fruit lacks the tenderness of flesh, and fine flavor of the Red Cherry tomato, but being very firm fleshed, and having only a few seeds, it is admirably adapted for canning, preserving, or drying in sugar. The amount produced by each plant will scarcely be less than that of the most productive sorts.

Dairy and Stock Department.

Is the South a Stock Country?

Possibly, Nature suggests many reasons why the South should grow live stock for market. Our climate, short, mild winters, luxuriant vegetation, all point to the economy of stock-raising. But what encouragement have we, the people, ever received from ourselves, to embark in this department of agriculture? Our laws are always adverse to it, though at first glance they seem to protect it. For instance, there is not a State in the Union but that requires the farmer to enclose his cultivated land, that "the range" may be given to stock; and should prowling cattle trespass upon a growing crop, it is the owner of the crop that pockets the damages, and not the cattle, or their, perhaps, unknown masters. On the other hand, if a farmer desires to convert his land into a stock farm, the law is quite as universal that he must enclose his pasture lands to keep stray cattle out, as well as to keep his own stock in.

This conflicting legislation has, in the past, retarded the material progress of our country, and is, in the present, imposing a tax upon our planters,

aggregating an amount, if reckoned pecuniarily, greater than all the national, State and county taxes annually paid into their respective treasuries. If the fencing on any farm or plantation in any State in the Union is properly kept up, according to law, the cost of such compliance is more than all the other taxes paid by that farm or plantation, exclusive of the damage done the country by the continued felling the virgin forests. And yet this tax is self-imposed, for where one man is to be found opposing it, whole communities are known to advocate it. Throughout the South the repairing of fences is considered a rainy-day job, or work to be done when otherwise the hands would be idle. Hence the cost is never counted. The idea seems seldom to occur to most Southern planters that if this fencing had not to be done, less labor would be required on the plantation, and, consequently, the income would be increased in proportion as the expenses are decreased.

I feel safe in asserting that, throughout the cotton-growing South, a vast majority of the plantations have one hundred pannels of fence to the hand more than is necessary to securely enclose the cultivated area. And yet, so as-a-matter-of-course is this enormous tax endured, that the question is seldom asked, can I not curtail my fencing? Were this tax legislated from our shoulders, herdsmen and shepherds would be introduced, and improved stock of all kinds would be grown. Planters would then learn they could not afford to own "land pikes" and mangy cattle. If but a single cow were kept, it would be viewed as a source of income, and not as now, a source of trouble to the owner and his neighbors. That our readers may more fully appreciate this tax, the following is submitted for their inspection, and refutation if incorrect.

The majority of Southern farms, as large as five hundred acres, do not have more than two hundred acres of forests, which, for the sake of computing liberally, we will say are unenclosed. The remaining three hundred acres are seldom divided into less than six fields of fifty acres each. To be again liberal, we will suppose each of these fields to be square, as a shorter fence will enclose a square than any other figure of the same area, except the circle. (And every one knows, where square or circular fields are seen, ten times as many can be found of every conceivable irregular shape, and, therefore, more expensive to enclose.) To be still further liberal, suppose these six fields lay in juxtaposition, which is seldom, if ever, the case; it will then require the shortest possible fence to enclose them, and the length of all the fencing will be at least nine thousand yards.

The cheapest fence that can be built in a timbered country, is the old-fashioned rail fence, rails ten feet long, worm five feet wide, lap six to eight inches, and ten rails high. Such a fence will require four rails to the yard, or thirty-six thousand rails to enclose the above six fields. It is within bounds to say that one-sixth of these rails must be renewed annually, and one-sixth of the entire fencing torn down and rebuilt, if the plantation is properly kept up. Throughout the South now-a-days this would be rather an exception than a rule, for, doubtles, a majority of our fences have had but

little more than "a lick and a promise" since 1861. But sooner or later the fencing must be done, and if the job is postponed until the entire fence requires renewing, so much the more disastrous to the planter.

Then what is the approximate cost of mauling and hauling six thousand rails, and with them rebuilding one-sixth the fencing on a five hundred acre farm? If it costs fifty cents per hundred to maul rails, it cannot possibly cost less to haul that hundred and with them rebuild a portion of the fence. Hence, the renewing one-sixth of the fence, would cost just sixty dollars. Now, if this farm be worth ten dollars per acre, this necessary work of rebuilding a portion of the fences, would be a direct annual tax of just one cent and two mills in the dollar, or almost the exact amount imposed upon the planters of South Carolina this year by the State and County taxes. Concerning this, great lamentation is heard; but to that, not an objection is urged. To the contrary, if the plain proposition were submitted to abolish the law requiring fences to protect the growing crops, a majority of our people would oppose it, and why? Chiefly because they have never counted the cost of keeping them in repair.

The existing stock or fence law in every one of the United States, discourages, rather than encourages stock raising. And the mistaken policy generally adopted throughout the South of "cropping on shares," with unsettled and unreliable laborers, is equally fatal to improved stock and good fences. I am aware that planters say, "I plant for a part of the crop, and require the hands to keep up the fences." Twaddle! Thus far, the southern farm-hand, since the enjoyment of his new birthright, has proven himself an expert cosmopolitan, here this year and gone next. And in his mind, blunt as it may be, revolves the inquiry, wherefore should I build a fence to last after I am gone? Consequently dilapidation, instead of fences, encloses much of our planted land, pastures are thrown open to the public, and southern cattle generally roaming at large, seldom cared for, and often maltreated, are degenerating rather than improving. If the safeguard of the law, in the shape of ten-rail fences, were thrown around the cattle instead of the crops, millions of money would be saved annually to the already impoverished South, and in less than ten years, every Southern State would export both bacon and beef. When, and by whom will our Legislature be induced to credit so simple a means with so coveted an end?

D. WYATT AIKEN.

The Sore Head in Poultry.

I notice in the March number, a cure for "Sore Head" in Poultry, and desire to give your readers the benefit of a remedy which has never failed me.

In the absence of a better cognomen, I have called the disease the "swell head." The first symptoms are a watery and frothy collection of matter in the eye, often accompanied by warts or sores on the head. If not attended

to the formation, a white, tough matter begins inside of the eye lid, and always below the eye, accompanied by considerable inflammation. The swelling increases rapidly, frequently extending to the inside of the throat, which becomes ulcerated. The fowl becomes blind in one, or both eyes—as the disease sometimes attacks only one eye at a time—and death ensues. The disease is highly contagious, and frequently sweeps the poultry yard if not arrested. I have never failed to cure a case even when the fowl's eyes were completely shut from the swelling. The frothy matter first collects in the front or outer corner of the eye, then to some extent impairing the vision, which will be perceived by the fowl striving often to wipe it away on its feathers.

Poultry thus affected should at once be placed in a coop by themselves. Make a strong brine in an old cup, or some other suitable vessel, and wash the head at least twice a day, using a soft rag. Suffer the brine to go into the eye, as it seems to arrest the formation of the hard tough matter alluded to. It sometimes occurs that this formation has already taken place before the disease is discovered. In such cases I sharpen a piece of chip, and by carefully inserting it between the eye and the lid remove it entirely. If not removed by an operation, though the eye become cured, there will always be an unsightly protuberance. If the head and gills have warts on them, the scabs should be removed by the finger nail, or by a pocket knife previous to washing. I do not remember of ever losing but one case, under this treatment, though I have often had to feed them by hand for two or three days, on account of blindness from swelling; and this case was so far gone when I took it in hand, that ulcers had formed in the windpipe. In addition to the above treatment, the nostrils must be kept free of matter by pressing with a rag outward along the beak.

Blackville, S. C. H. D. McMILLAN.

Poultry Raising in the South.

Whether the South is a "stock country" or not, in the full sense of the term, it is certainly a good poultry country, and the raising of fowls for profit has received too little attention among us; and there is truth and good sense in the following editorial article from the *Vicksburg Herald:*

It is reproach enough that we have to go elsewhere for bread or meat, not having enterprise and sagacity enough to raise it here at home; but it is a greater reproach that all this broad and fertile section of country cannot supply Vicksburg with chickens and eggs, and it was found necessary for our merchants, who deal in such things, to make the principal purchases at the Northwest.

Did the farmers' wives of Warren County, of Hinds, Rankin, Issaquena, etc., ever think that they could make a clear yearly profit on eggs and poultry of from five hundred to a thousand dollars, and even more; and add to this a revenue from a dairy, the income of a farmer's wife may amount to a sum barely earned by many a city clerk, and all the result of her own honest woman's labor, done with true womanly courage in a true womanly manner.

We know of farmers' families that are obliged to deny themselves many luxuries, and even necessities, in the way of dress, books, household conveniences, and even food of a better quality, because they "cannot afford it;"

yet these very same farmers' wives that have the time and opportunity to earn, by themselves, from five hundred to one thousand dollars each year. Our market should be able to afford eggs at fifteen and twenty cents per dozen, chickens at fifteen to twenty cents each, and butter at two bits a pound. At such prices, even the farmer's wife could make it pay; but no one need expect to succeed in such an effort unless they go at it in the right way, knowing what they have to do and how to do it.

There is nothing very difficult or profound in the matter of raising chickens and eggs, or making butter; but it needs a clean hand, a good heart, and a persevering mind.

Will our present article put a single farmer's wife to thinking, and prompt her to act upon our suggestion?

Department of Natural History.

Specimens of insects, securely packed, (according to instructions given in our October number,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. CHARLES R. DODGE, Department of Agriculture, Washington, D. C.

Grain Pests.

These are the rogues that come when the grain is nicely stored away, and after it has been saved from the attacks of scores of insect enemies in the field, and the owner is probably estimating its cash value. They work in secret, and their presence is hardly detected before the damage is done.

Look at that ear of corn, with a little dust here and there between the grains. It appears sound enough, but pick it up! There they are, hundreds of them, and they have not been idle, for nearly every kernel on the under side of the ear is hollowed out, and the pile of "dust" beneath where it lay shows that their sharp jaws were made for a purpose. Let us examine this fellow that is trying so hard to get out of sight. On close inspection we find our specimen to be about an eighth of an inch in length, of a chestnut-brown color, with two lighter spots on each *elytron* or wing-cover, (making four in all,) the head prolonged into a slender beak or "trunk," with sharp jaws at the end. It belongs to the numerous family of "snout beetles," nearly all of which have very bad habits, and is called "*Sitophilus oryzæ*. It devours corn, rice, wheat and other grains, and I have taken from a single Tamarind seed, from Mexico, sixteen specimens of this insect. An egg is deposited on a grain of corn or wheat, and the larva, which is a little creamy-colored grub, eats into it, and by the time it is ready to change to the pupa, it has made quite a hole. As soon as it becomes a perfect beetle it breaks through the shell, and is ready to spoil more grain and lay its eggs for future generations. Another species of the same genus, the true grain-weevil of Europe, *Sitophilus granaria*, which it closely resembles, is also very injurious in granaries.

Fig. 1.

Colors, chestnut-brown, spots reddish.

But here is one that looks flatter and more slender than the one we have been examining. A glance with the magnifier, for this, too, is a minute insect, shows it to belong to the *Cucujidæ*, which are flattened or elongate insects, usually of very small size. The beetle in question is of a reddish, brown color, long and narrow, having a square thorax, small head, and no snout, and is known by the name of *Sylvanus quadricollis*. Its eggs are deposited between the kernels and the larvæ work in the vital part of the grain. An allied species, *S surinamensis*, which closely resembles it, is not backward in following in its footsteps.

A brownish beetle, a little over a quarter of an inch long, rather flattened, and having club-shaped antennæ, or feelers; is oftentimes very destructive to stored grain. At one time, in France, it was said to have done more damage than either the weevil or the grain-moth. The grub is called "Cadelle," and the beetle is known to science by the name of *Trogosita Mauritanica*, Oliv. Though I have found these insects frequently in maize, they are not so abundant in this country as some of the other species of grain-eating insects. *Trogosita dubia*, a smaller, darker species, also destroys grain.

Fig. 3.
Color, dark brownish.

Another insect, *Anobium paniceum*, more oval in shape, light chestnut brown in color, and apparently covered densely with fine yellowish hairs, infests wheat, where it may sometimes be found in all its stages. Nor does it confine its attacks to wheat, but is actually found in tobacco, which it seems to relish quite as much as the grain. A twist of tobacco, in the Agricultural Museum at Washington, which was badly infested with this insect, looked as if a charge of very fine shot had been fired into it. The pupa generally "makes up" in a slight cocoon formed from the substance in which the grub is feeding. The perfect beetle measures less than an eighth of an inch in length.

It would seem that the above insects were quite sufficient in themselves to do all the injury that is inflicted upon stored grain, but thus far we have only been noticing the beetles. In the order *Lepidoptera* we find several moths, (*Tineidæ*) the larvæ of which do quite as much damage as any of the foregoing. One of the most destructive of these is the Angoumois moth, (*Anacampsis cerealella.*) The eggs are placed in clusters of twenty or more on a single grain by the female, from which the larvæ hatch in four or five days. When they first start on their journey they are not thicker than a hair. Separating, each one takes a single grain, into which it burrows, there to remain completely hid from view till it has reached its full growth. It is now about a fifth of an inch long, white, with a brownish head, and being a true caterpillar, is provided with six true legs and a number of false or pro-legs. It next gnaws a hole through the side of the hollow grain of wheat or corn; then retiring, it first changes to the chrysalis, and afterwards to the perfect moth, after which it makes its escape through the hole mentioned, and is ready to meet the opposite sex and lay its eggs for a second brood. The perfect insect is "of a pale cinna-

Fig. 5.
Color, light chestnut.

mon-brown color above, with narrow, broadly-fringed hind wings of an ashen or leaden color." It measures across the wings about half an inch.

Another small *Tinea* was noticed by Mr. Glover, infesting corn fields in the South, which closely resembled the European grain moth, *Tinea granella*, mentioned by Harris. Sheltered by the husk, it burrowed between the grains, something after the manner of the Angoumois moth, though its cocoons were not made up within the grain. The caterpillars were pink or reddish, and the moths were chestnut brown, marked with dark brown, black and yellow, and having the narrow hind wings also fringed. The description is so near that of *granella* that I am inclined to think they are identical. *Tinea zeæ*, a third species, a moth of a dull gray or blackish color, with a whitish spot at the base of the forewings, was very common in the Museum of Agriculture in Washington, before it was removed to the new building. We shall notice it again, however, in another article.

There are probably many other insects which injure grain in the granary, but those mentioned are the most important, and are the ones to be guarded against. And this leads to the practical part of the story, the means for their destruction: Kiln-drying seems to be the universal remedy, but it must be conducted with care, giving heat enough to kill the insects, but not enough to destroy the vitality of the grain, where it is desired for seed. Harris says a heat of 167 deg. Fahrenheit, continued for twelve hours, will destroy all insect life; a lower temperature of course requires a longer exposure. For the Angoumois moth, etc., fumigating with the gas of burning charcoal in tightly-closed vessels has been recommended; also, early threshing and winnowing, (of wheat.) Where grain is badly infested year after year, it should be kept in closed casks or tight bins, and should be occasionally examined. Kerosene oil has been recommended, but, unless the grain is for seed, the remedy would be as bad as the disease.

Answers to Correspondents.

Insects on Scotch Pine.—H. W. R., Aiken S. C. The minute white scales having a pale yellow spot upon their pointed end, found so abundantly on the leaves of the Scotch pine, are those of the pine-leaf scale-insect, *Aspidiotus pinifoliæ*, Fitch, belonging to the family *Coccidæ*. Those insects appear to be troublesome only when the pine is transplanted for the purpose of beautifying our gardens and grounds; in fact, the only specimens we have seen were either on, or taken from ornamental trees near private residences. The insects fasten upon the sides of the leaves, and when they exist in sufficient numbers, cause the foliage to turn yellow and drop from loss of the juices which should sustain it. As the natural history of the insect is similar to that of the orange scale-insect, noticed in the April number of The Rural Carolinian, it is not necessary to repeat it. We can give no practical remedy to use on a large scale, but where a few choice trees are infested, syringing with soap and water, tobacco water, or with the solution

Colors, whitish, with pointed ends of a pale yellow.

recommended for the orange scale-insects, may prove effectual.

Always spare the "lady birds," which are small oval beetled, marked with black spots, and belonging to the family *Coccinellidæ*, as these little insects spend their whole existence in ridding us of other noxious species.

Beetles in Doura Corn.—D. H. J., Charleston. The minute, dark colored beetles, found plentifully in a box of Doura corn, are specimens of *Sitephilus oryzæ*, commonly known in the South by the name of "rice weevil." See description and figure in an article on grain pests, present number.

Bean Weevil.—C. R. P. Without specimens, it is hard to say what insect it is that injures beans in the South, though, in all probability, it is the *Bruchus obsoletus*, of Say, which has caused so much destruction of late years in the North. The eggs are probably deposited in the same manner as are those of the pea weevil, *Bruchus pisi*, (Rural Carolinian, Vol. II., page 300,) only, instead of one weevil to a seed, in this case we find, often, half a dozen. The larva is a minute, whitish, footless grub, with a brownish head, and resembling that which is often found in wormy chesnuts. The mature beetle is not over one-tenth of an inch in length; color, grayish, the wing covers "having a slight appearance of alternating whitish and dusky."

As the insects come out in the spring,* keeping the seed over one planting in a *close* bag or box, will help to diminish their numbers; or, in the autumn, the ripe beans may be subjected to heat, being careful, however, not to get it so high as to destroy germination. Wheat will bear 190 deg. Fahr., but beans would probably require a lower temperature. See article on grain insects, present number.

In answering queries, we very much prefer having the insects before us, for then we know accurately the species of which complaint is made. There are about 8,000 species of beetles in this country, and many of them closely resemble each other. As there would be some satisfaction in knowing whether the weevil, injuring beans in the South, is identical with the Northern insect, will C. R. P. please send us a few specimens.

Syngamus Trachealis, of Siebald.—B. W. J. The Gape-worm of poultry, according to Verrill, is a small reddish worm, with a smooth skin, the females becoming about three quarters of an inch long. The male is a little more than an eighth of an inch in length; and both sexes are generally found fastened together in copulation, the union soon becoming permanent. The mouth is in the centre of a trumpet-shaped disk, on the anterior end of the body, the posterior end terminating in a point. The eggs are oval, and the embryos develop while the eggs are still in the oviducts; but how the young worms escape from the chicken's windpipe, or how they gain admittance to it in the first place, is not known.

The best mode of treatment is to remove the worms by means of a feather, stripped nearly to the tip, moistened with oil, salt water, or a weak solution of carbolic acid, and introduced into the windpipe. A twist round once or twice dislodges the worms. The operation should be repeated at intervals, and the worms that are dislodged *destroyed*.

*It was recently stated in a Southern Journal, that these insects had been found in seed beans *three* years old, but this must be a mistake.

How to make an Aquarium.

The simplest manner for constructing the tank is first to have a bottom of the desired size, say twelve by eighteen inches, made of hard wood, well varnished; a square post firmly set into the wood on each corner. These posts must have a narrow groove ploughed in, and in a line across the bottom, for the reception of the glass, made to fit into the bottom and corner grooves. If these grooves are first nearly filled with ground white lead, as it comes from the manufacturer, and the glass set in, it will form a water tight, splice, and harden in a short time; sometimes a headed rod with a screw end and bur, is put from one post to the other, on top of the glass.

Department of Mining and the Mechanic Arts.

Twitchell's Acidometer.

The wine-grower has at all times felt the importance of determining the amount of acid contained in his must, and also in the wine; but, as the quantity is very minute, and the determination of the amount requires an accurate result to be of practical service, the methods heretofore employed have been of no value to the great majority of practical wine-growers, as considerable time, with the skill and tact of a practical chemist, was necessary to use such methods, so as to be able to obtain in successive experiments, from the same must or wine, identical results. The foregoing named difficulties are overcome by the simple and ingenious invention to which I called the attention of the readers of The Rural Carolinian in a previous number, and in illustration of the instrument, I furnished a cut. I now herewith furnish full directions for the use of the instrument:

Having unscrewed the clamp and removed the covers, fill the jar A with water to the height indicated in the cut; then fill the test-tube B to the mark near the top with the liquid to be tested, and pour it into the jar C. Fill the spoon with the bicarbonate of soda, and draw it up by the rod which passes through the stuffing box in the cover of jar C, so that, when the covers are in place, the spoon and its contents will not touch the liquid in C. Now put on the covers and clamp tight; then push the spoon down into the liquid and whirl it about until the soda is thoroughly mixed; gas will be formed, and passing from jar C through the channel in the covers, to jar A, presses on the water and forces it up the graduated tube D, to a division which indicates the thousandths of acid contained in the tested liquid. The lowest division on the tube is three-thousandths, and it is figured at five and ten-thousandths.

A. Y. L.

Approximate Weights for Practical Purposes.

	Specific gravities.	Weight of a cubic inch in lbs.	Weight of a cylindrical inch in lbs.
Iron, cast	7207	.2608	.2048
Iron, bar	7700	.2785	.2187
Steel	7833	.2833	.2225
Copper	8878	.3211	.2522
Brass, cast	8396	.3037	.2385
Zinc, common	7028	.2542	.1996
Lead	11352	.4106	.3225
Tin, cast	7291	.2637	.2071

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"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

CO-OPERATION AMONG FARMERS.

We have, in a previous number, expressed the belief that the co-operation of capital and labor, in large agricultural companies is, in certain cases, perfectly practicable, and, in fact, essential to the highest success under the conditions existing here in the Low Country. We purpose to call the attention of our readers to that subject again and again, and to urge men of practical talent and means to take action on it, and test the plan in the field. Our object at this time, however, is to speak of other forms of co-operation, of which the agricultural community generally may take advantage.

Our agricultural societies and clubs are examples of co-operative action for the exchange of experience, the comparing of notes, and the diffusion of agricultural information. We are not among those who consider these societies and clubs utter failures. They have done, and are doing, some good, but they fall far short of what has been expected from them. There is something lacking in them, or in their management. What is it?

The agricultural magazine serves many of the purposes of a farmer's club, and confers its benefits on thousands whom societies and clubs never reach. It also has its sphere and its work; and it is a wide sphere and a grand work; but it leaves something to be desired above and beyond. Farmers need a closer bond of union than they now generally possess—some organization through which their interests can be promoted, their rights secured, and the knowledge and experience of each be made available for all—something that shall instruct, like the agricultural journal, bring farmers into frequent contact, like the club, and furnish a firmer bond of union, and a surer guarantee of mutual help and protection than either. It is claimed that we have such an organization in the Order of Patrons of Husbandry, which has also social features which make it attractive, and give it an elevating and enobling influence. We are not at all disposed to urge everybody or anybody to connect himself with this organization; for it may not commend itself to all as it does to us, but we consider it a duty we owe to our readers to again call their attion to it as one of the many means of securing the benefits of co-operative action.

CLOVER AND ROTATION OF CROPS.

A friend in this County, (Abbeville, S. C.) inviting me to pay a visit, presents the following inducements:

"I will show you a pretty clover patch for your trouble, and I think the scope of country ten miles square, between Greenwood and Ninety-six, can show the best oat crops in the South."

Further he says:

"Colonel, it is not a matter of argument at all in my mind, but of conviction, that the true rotation of our crops is, first cotton, or corn, or both; secondly, small grain, and principally oats; and, thirdly clover. Speaking of clover, my pigs have given me an experiment on this subject. In July, 1869, I turned over a small piece of land with a very thin stand of clover and heavy coat of weeds; in the spring of 1870, it was planted in yam potatoes, worked well, and a fair crop harvested 1st day of November. The patch was immediately sown in wheat, harrowed in, and clover and orchard grass sown on top. Being some distance from my house, this patch was not seen until last January, when I discovered my pigs had rooted up every square foot of it, as deeply as the little varmints could sink their snouts. I did not grieve over the wheat, but regretted losing my clover and grass. About the middle of February, I discovered that there was the best stand of clover on that patch I ever

had before on my place. The stand is three times enough for the land, but not much orchard grass. Whether this came from the seed sown on the wheat, or from the clover turned over the year previous, it demonstrates one fact, that clover when sown should be covered, and that it is not easy to cover it too deep."

Though I have experimented a good deal with clover, I am not prepared to refute the conclusion of my friend, though I think it highly probable, his sowing of clover in November, 1870, was, like the orchard grass, destroyed by his pigs, and his present stand comes from the crop turned under in 1869. This I think is proven by my friend's letter, for in it he says:

"Mr. Thomas Griffin, at old Cambridge, had two years ago, the most remarkable clover patch I ever saw. Last year this patch was cultivated in cotton, and sown in the fall in wheat; without resowing, he has to-day a better stand of clover than when first sown."

I would caution planters against sowing clover seed two years old, or ploughing in the first sowing as we do small grain. A clover lay turned over six inches deep, I know from experience, will produce a fine growth of clover one year after, if the ploughing under is succeeded by cultivated crops. D. W. A.

THE MILK SUPPLY OF CITIES.

We received, some time ago, from Hon. Horace Capron, Commissioner of Agriculture, the following inquiries. The subject is an important one, and we desire to make our replies as accurate as possible. In order to do so, we solicit information from those keeping cows in Charleston and vicinity, or having the necessary knowledge of the facts. Answers to any or all of Mr. Capron's questions will be thankfully received, and made use of, if available, in our reply:

I desire to collect information concerning dairying in the South, especially in relation to the milk supply of cities and towns, and I, therefore, respectfully submit the following inquiries, hoping that you may be able to answer them definitely, and also add any other facts which you may deem of interest touching the general subject:

1. Is the milk supply of your city of good quality, and in quantity equal to the demand?
2. What are the retail prices per quart, summer and winter?
3. Is the supply chiefly from individuals keeping a few cows each, or is it furnished to a considerable extent from large dairies?
4. What rations in kind and amount are provided for the animals, and what forage crops are grown for them?
5. What is the average time, per cow, in milk, and the average yield for the season?
6. What are the current prices of milch cows of fair quality?
7. What efforts are being made in your neighborhood for the improvement of dairy stock?

Yours, very respectfully,
HORACE CAPRON, *Commissioner.*

DOES IT PAY TO PULL FODDER?

We think not, under our present system of labor. Under the old system the objections to it were not so weighty. Now, the great object of the planter should be to economise labor. Corn fodder is excellent forage, but it costs too much labor, and if pulled when in the best condition injures the corn, as careful experiments have shown, to an extent equal to the value of the fodder; so it does not pay. But what shall we substitute for it? We might say clover, red-top, lucerne, etc., but all have not and cannot have, at once, their artificial meadows. In some portions of the South, it is an open question whether these are, as a rule, practicable. There are several other substitutes.

1. *Drilled Corn.*—Plant on good, well manured land, in drills three feet apart, at the rate of two and a half or three bushels to the acre; cut when in tassel; cure well and haul into the barn, or stack carefully.

2. *Pea Vine Hay.*—Sow the peas broadcast, on heavily manured land, or in drills where the manure is deficient; cut when the peas begin to ripen and cure without much exposure to the sun.

3. *Crab-Grass Hay.*—Every farmer can have this in abundance. See note on the subject of making it, in another place.

If you cannot make up your mind to abandon the old way, all at once, try both ways this season. Pull a portion of your fodder, if you will, but make the other forage crops also, to test their relative cost and value.

FRENCH IMMIGRATION.

There will, within the next year or two, be a large immigration from France to the United States, and especially from the territory lately ceded to Germany. The people who will come here would be a most valuable addi-

tion to the population of the South. Shall not something be done to direct their attention to these States, and especially to South Carolina? Let us move in the matter at once. We think there was an Immigration Convention held some time ago in this city, some eloquent talking, and sundry committees appointed. Gentlemen, are you ready to report? If the Convention really "meant business," here is an opportunity to go to work.

WHAT IT COSTS TO MAKE COTTON.

We desire to call special attention to the article on "The Cost of Producing Cotton," which we publish in the present number. We have seldom read a clearer or more satisfactory statement, though the conclusions reached are not so satisfactory as we could desire. Mr. Coker's example is worthy of being generally followed. When planters shall have learned what it costs per pound or per bushel to produce a crop, they will be able to answer, each for himself, the question, "Does farming pay?" and if it does not pay, they will set about learning how to make it pay; for we have full faith that farming, properly managed, can, in the long run, be made as profitable as any other business.

We have received from B. F. Crayton, Esq., Anderson, S. C., through Messrs. Sloan & Seignious, of this city, specimens of drain tiles of excellent quality, and are glad to note Mr. Crayton's success in their manufacture. We hope he will have plenty of customers, both for his sake and for the benefit of the farmers of our State. Draining is one of the first steps in progressive agriculture.

Briggs' Brothers, Rochester, N. Y., not only send out one of the largest and handsomest Catalogues of Flower and Vegetable Seeds issued anywhere, but they have got up a fine colored chromo representing forty-two varieties of flowers, which they offer as a premium to purchasers of seeds. It is certainly a beautiful thing, and they will please accept our thanks for a copy.

FARM AND GARDEN NOTES.

Crab-Grass Hay.

There may properly be difference of opinion on the subject of growing clover, red-top or timothy in some portions of the South, but everybody knows that crab-grass will grow anywhere—especially where we don't want it. Crab-grass is a good thing *in its place*, which is *not* in the cotton field, or between the corn rows. It will make hay—not quite equal to timothy, but better than much of the Northern hay for which we pay heavy prices. Every farmer who has not a supply of better grasses, should grow it every year as a separate crop. This is our way of doing it:

Take a good piece of land, as free from stumps and other obstructions as possible, and known to be well seeded. Manure it, if you can, with stable manure, lot scrapings, chip manure, ashes, or any other home-made fertilizer. In any event, plough it, at once, but not too deeply. Let it lie in that way till June, then plough again, harrow thoroughly, and run a tolerably heavy roller over the whole, to make it as smooth as possible. Have a sharp scythe ready and cut the grass when in bloom, not forgetting to read again if you have forgotten them, Mr. Yeomans' directions for "Cutting and Curing Hay," in the April number of THE RURAL CAROLINIAN.

A Barn for 3,200 Cattle.

A farmer out West has 3,200 cattle, and purposes to accommodate them all in one barn and stable building. The plan is a sixteen sided centre, with sixteen wings, three hundred and fifty feet long each, affording room for one hundred head of cattle on each side of the feeding floor, or two hundred in a wing—3,200 cattle accommodated in the sixteen wings. The centre building will afford room for a steam engine, corn sheller, mills for grinding, straw cutters, steam boxes, storing feed, etc. Corn cribs, with hopper bottoms, will be placed between these wings and the corn brought into the centre building by the engine with drag belt, and delivered to the corn sheller, the shelled corn being elevated to the story above, into a receiving bin, and drawn thence by spout to the mill below for grinding—all performed by the engine. A feeding car, filled from the steam box, will be run along the centre of each wing, and the cattle fed right and left from it.

Fruitfulness of Cuttings.

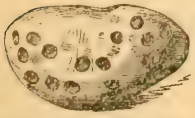
It is claimed that tomato plants, grown from cuttings, are more productive than those

which retain their original roots. We believe that this claim is well founded. We have other illustrations of the same principle. The sweet potato produces but indifferent crops where the tuber is planted. Slips or "draws," removed from the bedded tubers, produce much better crops, but cuttings of the vines are still more fruitful. Here is a question in vegetable physiology. Why is it that, in certain cases, at least, the farther we remove a plant from its original germ or bud, the greater its tendency to produce fruit?

Egyptian Millet.

We have several times called attention to this plant—*Pennisetum typhodeum*, we believe, is its botanical name. We have often grown it, and consider it one of the best, if not the very best of all, of the green forage crops. It is no new thing, but, for some unaccountable reason, is not generally diffused or known; and we are sorry to say we cannot tell our readers where seed can be obtained. It should be planted on well manured and prepared land, in drills about thirty inches apart. The planting and cultivation is similar to that of cotton. Whatever portion is cut over must be carefully worked as soon as practicable to give the excised plants a new start. The portion intended for seed should never be cut, but should be cultivated until the crop is large enough to smother the grass and weeds. One peck of well cleaned seed will plant an acre, but as the seed is difficult to clean, it is generally in a condition to require nearly double that quantity by measure.

The Bean Weevil.



We print, in their proper place, the remarks of our entomologist on Bean Weevils. Here is a drawing of a Lima bean, as perforated by these insects. We shall endeavor to send some of them to Mr. Dodge for identification. We think the pest is of foreign origin. We find it stated in the *Horticulturist*, for May, 1864, that weevils (whether of this species or not, we do not know,) appeared in some Lima beans imported from Lima, when they were two years old, none appearing the first year; and that the same thing happened in the case of some Mexican beans. A friend says that he saves his seed beans from the weevil by merely exposing them to the sun, spread out on tin plates or trays, a remedy that may easily be tried. We have saved our Navy beans, for eating, by subjecting them to artificial heat in an oven, but have not noted what temperature is required.

The Onion as a Farm Crop.

A friend calls our attention to the onion as a good crop for our vicinity. "As they have succeded best," he says, "in the old world, in warm countries—Egypt, Spain and Portugal—may it not be that we, in the South, have not made good use of our opportunities. Peas, potatoes, etc., are so perishable, and have to be hurried into market, let it be good or bad. Would not the onion have a much wider extent for market—the West Indies, for instance, and might not they be pickled?" Can any one give us the results of experience on this subject?

The Absorbing Power of Soils.

Soils differ very widely in the energy with which they absorb moisture, and it has been found that there is a close relation between their absorbing power and their fertility. According to Davy's experiments, 1,000 parts of a soil celebrated for its fertility, when dried at a temperature of 212° Fahr., gained in an hour from an atmosphere saturated with moisture, at a temperature of 62°, eighteen grains in weight, while the same quantity of a poor or infertile soil, gained only eleven grains.

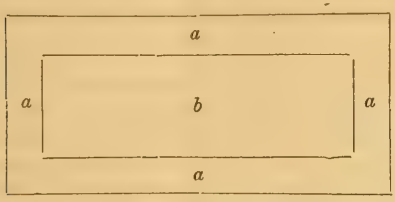
Tomatoes in the South.

One cause of failure with the various new kinds of tomatoes here at the South, lies in the fact that our seed is of Northern growth. Seed saved here from the same varieties will often prove entirely successful, showing that the fault is not in the variety, but in its lack of acclimatization. One should not give up a new sort as worthless till a second or third test with home-grown seed. New varieties should, also, be originated here, and may prove better suited to our climate than any we now have.

MARKED PASSAGES.

A correspondent of the *Rural New Yorker*, gives the following method of growing cucumbers successfully:

Make a bed, as shown in the sketch, fill the centre, *b*, with good stable manure, which should be raised six inches above the sides of the bed, *a*, *a*, *a*, *a*. Plant the seeds from four to six inches from the manure, all round in the beds, *a*, *a*, *a*, *a*. One or more buckets of



water is to be put on the manure every evening. The roots of the plants will soon find their way to the moist manure, and you will have on a very small piece of ground, more cucumbers than a family can use.

——A farmer who has given the rich new lands of the far West a fair trial, and learned that as great drawbacks exist there as elsewhere, writes as follows:

I should recommend every industrious young man that has the privilege of staying on the homestead to stay there, or, if he can get hold of one of those old, worn-out Maryland or Virginia farms, to take it in preference to any of those prairie farms. I would rather build up one of those old Atlantic farms than make a new one two thousand miles from the coast. Don't be afraid of the poor land, lime and clover will make it produce just as much corn and wheat as any of the land in the Mississippi Valley. I say so from experience.

—— For repelling insects, the *Gardener's Chronicle* recommends a dry mixture of four parts road-dust, two parts of powdered tobacco, of any kind, and one of sulphur—to be dusted by hand over the plants, after sprinkling with water.

——A fire and water-proof paint for shingle roofs, according to a correspondent of the *Rural New Yorker*, may be made as follows:

Slake stone lime, by putting it into a tub to keep in the steam. When slaked, pass through a fine sieve, and to each six quarts of it add a quart of rock salt and one gallon water; boil and skim. To each five gallons of this add pulverized alum, one pound; copperas, one-half pound; potash one-half pound; hard wood ashes sifted, four pounds. Apply with whitewash brush.

——"Cokesbury" writes to the *Columbia Phœnix* as follows:

Mr. Editor: I am in receipt of a letter from a friend, dated "Pastoria, Arkansas, March 27, 1871," that contains the following paragraph:

"You can appreciate the condition of affairs here better when I tell you that four-fifths of the land is planted again in cotton, and in many places, the fields are white with last year's crop."

Is it too late to warn the planters of South Carolina against a repetition of this suicidal policy? Far better to drill the face of the whole State in peas than labor through another twelvemonth at cotton to clothe the world at our expense.

RURAL PUBLICATIONS.

Wm. Wood & Co., 61 Walker street, New York, have issued a second edition of that standard pomological work, "The American Fruit Culturist," by John J. Thomas. It is a thorough and well considered work by a practical fruit-grower of long and extensive experience, and contains plain directions for the propagation and culture of fruit trees in the nursery, orchard and garden, with descriptions of the principal varieties cultivated in the United States. It is copiously illustrated, and very clear and explicit in its directions, leaving little to be desired, except good judgment in the person making use of it, to ensure such modification of its rules as climate and other local conditions may render necessary, and no book can supply this. (Price, $3.)

—— "Money in the Garden" is an attractive title and an appropriate one for Quinn's "Vegetable Manual, prepared with a view to Economy and Profit," lately issued by the New York Tribune Association. Mr. Quinn is a practical gardener, has made money in the garden, and here tells the reader how it may be done, *provided* the reader has something of Mr. Quinn's energy, industry and business tact, together with sufficient capital, and a favorable location for the business. The book, however, is an excellent one for those whose aim is simply to grow fine vegetables for family use. (Price, $1 50.)

—— "The Strawberry Garden" is a very practical story of a very sensible family of young people who, needing money, had the courage to plant strawberries, and *sell* the surplus not required for home use to "held out;" and how they made money, and were

not the worse thought of for doing it, though a foolish pride at first led one of the young ladies, who had an aristocratic lover, to hold aloof from so "degrading" an expedient for improving the family finances. Lovers of stories and strawberries (as well as other and more sentimental lovers) will do well to read it. (Price, 38 cents; Loring, publisher, Boston, Mass.)

——"A Treatise on the Horse," by R. H. Parks, Physician, Surgeon, Farrier and Trainer, is a practical manual of horse training and stable economy, treating of the natural history of the horse, his habits, the effects of domestication and confinement in stables, shoeing, diseases and their prevention and remedies, etc. The author is the inventor of a patent horse shoe, about which he naturally has a good deal to say, and it appears to be a good thing. (Price $1. Address the author, Columbus, Ohio.)

——"Sheppard's Seed Catalogue for 1871, with Cultural Directions." Sheppard's seed store is an old establishment, with an excellent reputation. Address James Sheppard, 29 Fulton street, New York.

SCIENTIFIC NOTES.

A NEW PLASTIC MATERIAL.

A beautiful plastic substance, called artificial ivory, is made by mixing cullodion with pure phosphate of lime. On setting, the mass is very hard, and susceptible of a high degree of polish. The material can be applied to many uses in the decorative arts, and is likely to prove of very great value.

CARBOLIC ACID AS A PRESERVATIVE.

A use to which carbolic acid has lately been applied, is in the preparation of a paper saturated with a diluted solution of it, for the purpose of wrapping up animal substances, such as fresh meats, etc. These are preserved perfectly for a considerable length of time, and the odor of the carbolic acid is dissipated in the cooking.

NOVEL USE OF BENZOLE.

Benzole has been applied to a somewhat novel purpose. If poured on a piece of ordinary paper, immediate transparency is produced to such an extent as to enable one to dispense entirely with tracing-paper. On exposure to air, or, better, a gentle heat, the liquid is entirely dissipated, the paper recovers its opacity, and the original design is found to be quite uninjured.

WATER-PROOF PAPER-HANGINGS.

A German manufacturer has recently introduced water-proof paper-hangings, which can be washed with soap and water, without the slightest detriment, and which also do not permit the moisture from damp walls to strike through. These wall-papers do not differ from the ordinary kinds, except in a more intense and softer tone of the colors. The expense is said to be but little more than that for the old-fashioned sort.

PHYSIOLOGICAL EFFECTS OF COLORS.

Each of the colors of the spectrum seems to have its peculiar effect upon the human mind and human health. Red and yellow stimulate the brain; blue depresses, by exhausting the vital energy; scarlet makes bulls, and some men, madly pugnacious; green, violet, and all the sweet tints which Nature paints so often, and which suit the eye, soothe and caress, and have in them the elements of cheer and health. Physicians have given us the record of diseases generated on the shady side of a building or street, and of cases cured by removal out of a dark into a bright room or locality. Wounds heal more quickly, delirium departs sooner, and convalescence comes more rapidly, when the system is under solar radiation.

Mr. Wm. E. Simmons Jr., of this city, has been appointed a Special Deputy of the National Grange, Patrons of Husbandry, for Charleston and adjoining counties, and will attend to the organization of Subordinate Granges within his jurisdiction.

——The strongest vegetable fibre known, except, perhaps, the Ramie, is the New Zealand flax. It has long, sword-like leaves, 10 to 12 feet in length. It is used by the settlers for binding their sheaves, fastening their gates, tying up their horses, and in almost every possible way.

——A new invention, in the form of a common buggy, propelled by steam, is exhibiting in New York. The machinery is the same as that of a locomotive.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

ADVANTAGES WEST OF FLORIDA.

Editor of The Rural Carolinian:

D. Z. E., Jr., desires information in regard to Florida. Seeing no response, I conclude to furnish such as I possess, from time to time, through THE RURAL CAROLINIAN.

This place is located in lat. 27½, and is situated in the extreme northwest part of Hillsboro' County, lying on the Gulf, or Anclote Bay. The climate is delicious, and, so far, perfectly healthy, (I have lived here but two years,) with a soil suited to the raising of the finest fruits and vegetables. Our first mess of snap beans was culled on the 5th of March; tomatoes are in bloom, and Irish potatoes ready for use. My corn, which was planted rather late, (on the 2d of January,) is now breast high; melons, cucumbers, and squashes are just running. This lateness is owing to the freeze, which killed us out on Christmas. Last winter was very cold here, and destructive to the tender fruits and vegetables.

I had just started a small pine apple plantation, of about two thousand plants. They were killed to the ground, but are putting out again. I lost the crop, but not the plants. The guavas were also killed to the ground, but are now flourishing again. This fruit grows in lat. 29, with but slight protection; here they flourish, and were never known to be injured by frost since the great freeze thirty years ago, until this year, '69 and '70. They grow here in great abundance and variety, beginning to ripen in August, and lasting through the winter. Hogs and poultry thrive and fatten on them. They need no cultivation, but grow wherever the seed are scattered, and upon any kind of land. This fruit could be made very profitable, by the female portion of the family, in jellies and preserves. But of all the fruit, I think the banana the most profitable and remunerative, both for home and exportation to market from the farm. They should be planted, six feet apart, on very rich land (or land made so by manures.) This would give twelve hundred and twenty-five per acre. Now, if properly planted, they bear a head in twelve months, of forty or fifty pods to the head. The second year two shoots will bear a head to every hill, giving 2,450 heads to the acre, the price of which is from one to two dollars per head. I have known seven heads in one hill, at once, on a piece of ground not six feet square. The produce of that one hill was worth fourteen dollars. There is no fruit or vegetable in the world that makes more than the banana. Colonel Dancy has already given a fair estimate of the profits of orange culture, but I believe bananas will beat anything else. It requires about two hundred and fifty dollars to plant an acre, including the setts.

The land here is State land, and can be had at one dollar twenty-five cents per acre. The market is Cedar Key, thence to the West by steamer, or to New York by rail. Our transportation is by sail-boats from here to the Keys. There are but three families here. Fish, oysters, venison, turkeys, bear, tigers, cats, wolves, and small game are abundant.

B. F. MEYER.

Cedar Key, Fla., March 10th, 1871.

WHY FERTILIZERS OFTEN FAIL.

Editor of The Rural Carolinian:

To renovate worn-out land we must replace, by fertilizers, those elements necessary for plant food, which the preceding crop has withdrawn. Now, the planter may purchase his fertilizer from honest dealers, and it may be all it is recommended to be, and yet the planter may be doomed to disappointment in his crop, loss of time and waste of money. Why? My opinion is that the planter is generally ignorant what elements his land really stands in need of. For instance, I expend $10 per acre in the application of lime to my farm, when, upon examination, my soil is found not to be deficient in that element. Thus I proceed, adding lime to lime, potash to potash, ammonia to ammonia. Can any man expect to derive any benefit from such a process? Yet I am inclined to think that at least one half the failures with commercial fertilizers are owing to just such applications.

I learn that in some of the Southern States they have duly qualified and authorized inspectors of fertilizers, and I am inclined to think that in order to insure success, we should also have some qualified inspectors of our soil, where we intend to apply those high-priced fertilizers.

In order to succeed in anything we undertake, we *must* know exactly what we are doing. No physician can prescribe a remedy without having some idea of the disease. The disease of the soil is what I want to know. I am too old now to study chemistry, and I have no laboratory. How am I to know the constituents of the soil? Please, gentlemen, give us all the information you can on the subject—the plainest, easiest, surest and quickest way for men of common sense to obviate the above-named difficulty.

Olustee Creek, Ala. W. E. FREEMAN.

THE CHEAP GRAPE TRELLIS.

Editor of The Rural Carolinian:

Being an amateur, and a very ignorant one, I read everything on grape culture, etc., with avidity, including an article in your March number on "Cheap Grape Trellis." To advocate or buy anything because it is cheap, and not look to the results or quality, is bad policy. What we want at the South is the best at the lowest price obtainable.

The "Cheap Grape Trellis" looks beautiful on paper, but how is it in practice? Mr. Mask, as near as I can understand him, seems to follow the renewal system. With that I will not quarrel, but leave to wiser heads than mine to decide. I will suppose he leaves three or four buds on the bearing cane of a young vine, his top shoot will make more growth than the next, the lowest one very little, or none at all, the tendency of the sap being to the top. If he leaves more than four buds on an older vine, why so much the worse for his "Cheap Grape Trellis," for less buds will push on the cane, or, if they grow, the lower ones will make but very poor fruit. But suppose all the buds break evenly, and have from three to four bunches of grapes on each shoot, where does he tie those shoots? All of them to the oblique pole, where they would smother one another, or does he leave them "dangling about?"

Your reprint, Mr. Editor, of the article on "Cheap Grape Trellies." gives it a guarantee to men like myself, who are searchers after the truth, and it will, no doubt, be adopted by many, who will, after my poor light, be very much disappointed; to keep them from being so is the intent of this letter, by getting some experienced grape-growers opinion on the "Cheap Grape Trellis."

GEO. C. EYRICH.

Jackson, Miss., March 20th, 1871.

THE ANGORA GOAT IN THE NORTH.

Editor of the Rural Carolinian:

Having read an article in THE RURAL CARLINIAN, in regard to these beautiful and hardy animals. I am tempted to say a few words about them and their habits here:

I have tried them over ten years and have used their fleeces to make blankets, carpets, etc. I think they should find a home on every farm. They are very docile and kind, and are fond of being petted. Give them a pasture with access to the barn yard, and they require little care. Coarse feed and weeds are readily consumed by them. If confined to some remote field, then give them a shed, for they have great local attachment. They want a home and a shelter. Every evening they return to the same place, and if a storm comes up, they run to their shelter in time, and not as other farm stock wait until wet and cold and then look for a protecting place. The wethers are equal to venison or mutton, more like the former than the latter. There has been much said as to their fleeces for the fine and more fancy fabrics; such as fringes, tassels and shawls of oriental splendor; hence, I have confined my remarks to their practical uses and their fleeces, for it is to this that many look. The males crossed with the common she goat, gives a wonderful improvement. The wethers if broken to work by the children, make them a team with which they spend many hours in happy and innocent enjoyment. Every farmer or planter should procure a pair of these profitable animals, and then he can test their merits at small cost. Many will soon want to increase the number. They naturally increase wonderfully fast.

JOHN S. GOE.

Brownsville, Pa., February 25th, 1871.

DR. C. C. PARRY ON ESPARTO GRASS.

Editor of The Rural Carolinian:

I received from you some time back, a small specimen of "Esparto Grass from Experimental Gardens, Washington." It was too young to show any distinctive characters, so I addressed a note of inquiry to Dr. C. C. Parry, the Botanist of Agricultural Department, who has just returned from St. Domingo. From his letter received yesterday I made the following extract, which you see confirms in every particular my views as expressed in article in THE RURAL CAROLINIAN.

H. W. RAVENEL.

Aiken, S. C., April 10th, 1871.

"As to your inquiries in regard to Esparto Grass, I would say that I made a particular examination of the subject when in Kew, England. There are as you suggest, two very distinct grasses, having however very similar economic properties, and readily substituted one for the other. I noticed that the *Lygeum* was oftener used for ornamental basket work; the *Macrochloa* being, perhaps, more abundant and supplying the largest bulk of the commercial article. We have seeds of the latter only, which were sown last year, but I think did not grow very well. I have no specimens of *Lygeum*. Of course you are right in your inferance that no *Juncus* is used or substituted for Esparto."

YUCCA RECURVIFOLIA.

Editor of The Rural Carolinian:

Being disposed to lend a "helping hand," and contribute occasionally to the pages of your useful Monthly, now fast becoming a household necessity, I herewith send you an

article, falling within the scope of your scientific department.*

On a former occasion I furnished you with a note of the discovery of the cranberry, in Lincoln County, N. C., at a locality hitherto unknown to botanists. On visiting this place quite recently, I had the pleasure of discovering in an adjoining and *nearly exhausted* field, (too common in the South,) a rather rare species of yucca, (*Y. recurvifolia*,) capable of being turned to useful account as a textile fabric. Indeed, all the species of this plant possess extremely tenacious fibres. The neighbors, for several miles around, collect the leaves, scald them, to give them pliancy, and then use them for hanging up their meat. Elliott speaks of it being found on the seacoast of Georgia, and Nuttall in sandy fields of North Carolina, but since his day it had escaped the notice of subsequent botanists. Our new and "neglected resources" are continually rising up before us, and admonishing us to diversify our industrial pursuits. "The times are changed, and we must change with them." C. L. HUNTER.

Lincoln County, N. C.

FLAX AS AN ORNAMENTAL PLANT.

Editor of The Rural Carolinian:

I beg to bring to the attention of ornamental gardeners and planters the beauties and merits of flax. The beds of flowers, sown with flax around the edges successionally, will present a border of pretty blue flowers in succession for almost, if not quite, the whole year; for if there is any season in our climate when flax will not grow, I do not know which it is; and the seed thus grown would be as much as is ordinarily needed in a family. To planters its merits are, that it can be grown at almost no other expenses than those of sowing and harvesting; while I have read, from what I considered good authority, that one bushel of flax seed and one bushel of oats are, in feeding stock of any kind, equal to sixteen bushels of oats. The merits of oil cake—flax seed meal after the oil has been expressed—are well known, both for milch cows, fattening cattle and poor old horses, as well as sheep and hogs. R. C.

INQUIRIES AND ANSWERS.

R. N. L. Irrigation has been so little practiced in this country or in Europe, except on grass lands, that exact and definite rules, derived from experience, for its application to our ordinary farm crops are wanting. The corn may be planted and worked in the ordinary way. Let on the water a few days before the second working, leaving it on only long enough to thoroughly saturate the ground. Turn it on once or twice a week, according to the dryness of the weather. If the soil be inclined to "bake" a cultivator should be frequently used to keep the surface in a porous condition.

——W. J. H., Florida, and others. The palmetto leaves shipped to Europe, we understand were those of the saw palmetto, (*Sabal serrulata*,) and that they were simply cut from the stems, dried and packed in bales. We shall be glad, however, if some one who knows will give us more definite and detailed information. We have long believed that the saw palmetto, now such a pest in Florida, can be made a profitable object of commerce and manufacture.

——"Pickens." Tall Oat Grass, (sometimes called Evergreen Grass,) Orchard Grass, Blue Grass or Red Top, should, we think, make good winter pastures in your region; but you must not graze them so closely in summer and fall as to prevent the plants from seeding the ground well each year. The soil must be good, however, or none of them will succeed.

——D. Wishes to know why Mr. Graves presses his hedge cactus upon the attention of the public, seeing that he will neither sell nor give away the plants. We are not authorized to answer for Mr. Graves, but from what we know of such matters, from experience, we presume he has received more letters of inquiry and application for plants than the most obliging and patient gentleman in the country would or could answer. We hope, however, some way will be devised for distributing the plant, so that it can have a fair trial.

——"A Young Stock Breeder" wishes to know if N. P. Boyer & Co., of Parkersburg, Pa., are trustworthy. We are sorry to say we cannot recommend them. For pure bred poultry, in the South, we can only refer him to those who may advertise in THE RURAL CAROLINIAN. Those among our own people who have such stock for sale should let it be known. "Young Stock Breeder" also wants a pair of setters, pointers, or Newfoundland dogs.

* The article referred to is very acceptable, and is on file for insertion in our next number.—ED.

——M. There are numerous *mole traps*, and hundreds of "sure remedies" have been published; but, somehow, they don't prove effectual, except on paper, partly, perhaps, on account of not being properly and perseveringly applied. We have no faith in the castor oil bean plan. Some one says that an elder stick placed across their subterranean path will effectually stop them. They will gnaw the bark and will be poisoned by it. It can easily be tried.

—— A. G. T., Edgefield, S. C. The plant you send for name, is chickweed, (*Stellaria media*,) very common in some portions of the country, and considered a pest.

——Barnwell. What is generally known as *rust* in cotton is, we are convinced, simply a *blight*, caused either by an inherent deficiency in the soil, stagnant water, (in undrained land,) or by undue stimulation with fertilizers, or two much rain, followed by drouth.

——Gardener. To pick tomatoes in just the right stage of ripening, for long keeping and transportation, is an operation requiring judgment and experience, and definite rules can hardly be given. For a distant market, however, they should be gathered before they redden—say when they have become decidedly yellowish around the stems.

——A correspondent wishes to know the best and simplest way to make lime from oyster shells, and if it will pay to haul them ten or fifteen miles for the purpose. Will some one who has the necessary experience reply.

——Frank H. The navy bean can be grown with success and profit in the South. Plant and cultivate the same as the garden snap bean. See Rural Carolinian for January, 1870, and notes on the bean weevil in this number.

——J. P., Centre, Ala. The specimen of grass you sent came to hand in a damaged condition, so that we are not sure what it is, but think it a *panicum*, and probably *P. crusgali*, known in some localities as barnyard grass, as it flourishes most luxuriantly about barns and stable lots. It might make good green forage, but is too coarse for hay.

——M. F. Bonham, Loundsboro', Loundes Co., Ala., wishes to know if "L. H. L.," of Marion, S. C., (author of an article on "Experiments with Fowls," in Rural Carolinian for December, 1870,) would dispose of half a dozen eggs of his Brahma breed of fowls. If he will, he will please reply by letter, addressed as above, giving price, etc.

——J. W. S. Your question, in regard to dividing a crop, is not of sufficient general interest to be discussed here, but we think that "K." should receive his one-third, and no more, according to the original agreement, in either of the supposed cases.

——"Up Country." A little spirits of turpentine, mixed with their salt; or, flour of sulphur, prepared in the same way, will, it is said, rid sheep of lice and ticks; but we cannot speak of these remedies from experience.

——Several correspondents inquire what is the best breed of fowls for the South, and who, in the South, has fowls and eggs of the pure breeds for sale. Those who have stock of any kind for sale should advertise in The Rural Carolinian.

——W. S. B., Bamberg, S. C. Your grass is a species of *Bromus*, probably *B. mollis*, closely allied to *chess*, or cheat, and is of no agricultural value.

——Dave. The "Campbell Corn" is very handsome. Corn often degenerates, in the way the crop is generally managed and the seed saved; but with high culture, and a judicious selection, it may, on the contrary, be improved from year to year indefinitely. There are so many "Washers and Wringers," that it is difficult to say which is best. The kind most approved here costs $25 for the two machines combined.

——There are growing in Trenton, N. J., two cork trees raised from acorns sent out from Washington a few years ago by the patent office. There are others in North Carolina and Florida.

——Near Chicago is a steam garden of two acres, covered with grass, and a network of pipes laid beneath the beds, supplied with steam by a powerful engine and boilers, to supply warmth and moisture.

——The consumption of coffee in the United States last year was over 120,000 tons.

LITERARY AND HOME DEPARTMENT.

"RUPERT."

Rupert's young heart had known poetic joys,
That strengthen'd into blessings with his years;
And now, in his first manhood, he looked back
On the mysterious beauty of the past,
All finish'd and divided from his life,
Like some strange being in another world,
As poets see the future. There was one
Among these recollections, that he loved
Most tenderly to call up in his mind,
When rosy childhood hung upon his steps,
With joyous laughter and sunshiny tears;
Tears with more April than December in them:
His father, a stout rustic carpenter,
Who built one half the village cottages,
Now, in his son's fifth year, was building one
For Farmer Adams, on the little hill,
A half-mile from his own hut, 'mid the pines.
And all day long did Rupert play near by,
With block and board, and wooden saw and adze,
And dream of when himself should build a house,
While, in his heart's heroic pride, he saw
The workman deftly spring upon the joists,
With rafter, or with wainscot, at the end,
And merry clang of hammers that awoke
Melodious echoes in his boyish heart;
Or roused the artist in him by some touch,
Some perfect piece of joinery, which show'd
The plastic hand, untaught, but natural,
Of his rough father. And it was his joy,
Anxiously waited for from early morn,
To bear at noon his father's humble mess
Of boiled potatoes in the antique dish,
Ere yet he could surmount the new-felled pines
That hemm'd the narrow pathway by the stream,
So that, with rent frock and wet feet, he came
Before his father, whose scant praises were
Made sweeter by his scolding; and he said
Rupert would make a better carpenter
Than he was, for he noticed in the boy,
His mother's apt, neat way, which promised well,
And he would give him learning if his gains
Next year were greater. But each after year
His fortune fell; and soon he failed and died,
And Rupert's mother, with her needle, made
The means that made him greatness.

P. J. MALONE.

A REMARKABLE BODY OF WATER.

Prof. J. P. Stelle gives the following interesting description (in the *Am. Jour. of Microscopy*) of what he saw in the water of a lake in central Florida:

I turned my attention to the water, and was soon convinced that I had, undoubtedly, met with a phenomenon; for it was so clear, so very transparent, that I could see through it in every direction with as much apparent ease as if it had been the atmosphere itself. Presently I saw one of the inhabitants hinted at, a little creature of a light brown color, looking, as it glided here and there through the pure element, not unlike a common chimney swallow. Then came another, and another, until all the waters of the lake seemed to be thickly swarming with them. They were very busy, and very swift in their motions, darting, whirling, and angling with the greatest ease and the most charming grace; the guide said that like birds of the air they were in quest of their prey, feeding upon animals too small to be seen by us from our standpoint.

Suddenly, while I was gazing in wonder upon these strange creatures, a new actor appeared in the person of a larger animal, about the size, shape, and color of a huge muskmelon. He was quite transparent, so much so that I could see through and through him as plainly as if he had been a glass jar; and as he moved leisurely about, I noticed that he was catching and devouring the little "swallows" without mercy. His interior, which seemed to be a huge cavity—nothing more—was literally filled with them, some still alive and swimming about in their strange prison. The entire mass held within his gigantic stomach kept up a rapid whirling round and round in one direction, from which I inferred that he had no regular digestive organs, but simply *wore* out his food; that is, reduced it by friction to a proper condition for his sustenance.

Scarcely had I got fairly interested in this extraordinary animal, when along came something which looked with its slim, arching neck very much like a swan. Its course was so directed that ere long it was brought into contact with the "muskmelon," and a fight was the consequence. It was a short fight however; for neither party seemed to relish the business, so they separated, and struck off in opposite directions. A little distance, and the "swan" met another of its own kind, and they commenced billing and cooing like two mated doves; but their pleasures were destined to be of short duration, for just at that instant a large and hideous looking creature with great horns and glaring eyes, pounced upon them from a covert hard by, seizing them both. A terrible struggle ensued, in the course of which one of the "swans" made its escape, but the monster gripped the other fiercely by its slender neck until it ceased to

struggle, after which he settled down with it to the bottom of the lake, and very quietly began converting it into a meal.

About this time I noticed a second monster, equally as frightful in appearance as the one just referred to, though evidently of a different species. He was moving along on the bottom of the lake, and, unless his course were changed, would pass very near the other. The first monster's treatment of the "swans" had made me his enemy, so I was well pleased with the turn affairs showed a prospect of taking; I desired that his banqueting should be disturbed. And it was. The new comer found him, and went in for a share of the prey. A battle, the most frightful that I had ever before witnessed between two living creatures, immediately commenced. They seized each other and rolled over and over in a real death struggle, for several minutes, in the course of which they actually tore each other limb from limb. Finally one of them yielded up and died, after which the other, with but two legs left out of six, dragged itself slowly away. And another installment of animals, some like gigantic leeches, and others like Oriental turbans, and all effecting locomotion by stretching and pulling themselves into every conceivable shape, settled down and fell to regaling themselves upon the carcasses. They were, doubtless, the vultures of this remarkable body of water.

"ANDENKEN."

[A contributor sends us another version of Matthisson's "Andenken." Our readers can compare it for themselves with the original and with Barton Gray's paraphrase, as published in our April number.—Ed.]

REMEMBRANCE.

I think of thee
When grove and tree
Echo the wail
Of the nightingale;
When think'st of me?

I think of thee
By fountains free,
In leafy bower,
At sunset hour;
Where think'st of me?

I think of thee
(How longingly)
With sweetest pain,
While warm tears rain;
How think'st of me?

Oh! think of me
Till joined we be
In some blest star;
I think, tho' far,
Alone of thee.

Clarence Sinclear.

PLACE AUX DAMES!

One of the strongest elements in the Order of Patrons of Husbandry, is the social feature. Ladies being admitted to full membership enhances its value. This should not be overlooked and made secondary. The places of meeting should be made as social and attractive as possible. There will, of course, be some who may join from mercenary motives, and will fail to fully appreciate the beauties of the ritual; but those who have refinement in their natures will look upon it in a far different light. We consider the lectures in the third edition of the manual some of the most beautiful to be found in any organization, and it has been asserted, by competent judges, that they have no equal. The ceremonies being liberally interspersed with singing and music gives them a charm.—*National Farmer.*

THE MORNING ABLUTION.

How do you perform the customary morning ablution? Simple as it may appear, there is some sound philosophy in the art of properly bathing the face. It is a cleansing, refreshing, invigorating act, and highly conducive to the health of the individual. The application of nice cold water, and the friction with the hands, sets the blood a flowing and the face a glowing, produces a perfectly exhilarating effect upon the brain, braces up the system, and strengthens the organ of sight. There is but one way, however, to experience all these beneficial effects. Bathing in warm water, and, perhaps, by a blazing fire will not do it. Pure water just from the pump, and out of doors, is the plan.

First plunge the face, with eyes closed, under water, and then rapidly open and shut the eyes, as long as you can hold breath without feeling pain. This action of the eye will cleanse it and strengthen the vision—a very important matter for old people. We have heard of aged persons having the eyesight restored by this simple act. After withdrawing the face, scoop up the water in both hands and give the face a vigorous scrubbing, and take care to rub the eyes forward *towards* the nose. Then pass the wetted hands over and through the hair, and pat the top of the head until you feel the water to the skin. With ordinary care of the health in other respects, this simple act alone is a sure *prevention* of the headache. Now wipe dry with a napkin, comb and brush the hair, and you are done. Never use oils or pomades on the hair. Use only water. I labored daily in the dust and torrid heat of our past two summers, and always kept my hair nice and glossy, simply by washing it whenever I bathed my face. The proper use of plenty of pure water is the *best* antidote for disease.

B. W. J.

SOMETHING FOR BREAKFAST.

In the first place everybody wants coffee. There are many ways of making it, most of them very poor ways. I have my way, but that is not what I am now going to describe. We, however, indulge in a cup of *Cuban coffee* occasionally, as an extra luxury, and this is the way it is made:

CUBAN COFFEE.—Put three pints of rich sweet milk in a coffee pot, and let it boil. When boiling put in a teacupful of ground coffee, and boil five minutes. Strain and serve.

These are times when economy should be the order of the day, and here is the way I make—

AN ECONOMICAL BREAKFAST DISH.—If you have a few bits of meat, or two or three cold potatoes left over, put some "drippings" into a skillet; slice the potatoes thin, cut the meat up fine, and add salt and pepper to taste; then beat two or three eggs, according to the size of the dish to be prepared; stir them to a cup of cream or milk, and pour over the meat and potatoes. If eggs are not plenty, use fewer eggs and more milk or cream. If milk, add a half teaspoonful of butter. Keep it over the fire, stirring constantly, till the eggs are cooked. It takes but a few minutes to prepare this; but do not leave it an instant till done, or the eggs will burn and ruin the whole.

The following is good for any time and easy to have where cows and hens are kept:

CHOCOLATE CUSTARD.—One quart of cream or milk—if cream, take six eggs; if milk, eight eggs. Boil in a tin pail, set in water, and when just boiling, add a half pint of grated chocolate; when this is dissolved, pour it over the beaten eggs. Set on the fire, and stir until it is thick as boiled custard. Add one-and-a-half pint of sugar and a little vanilla, and strain it.

As many ladies are now assuming the honorable responsibility of providing with their own hands the good things which come upon their tables, we want to learn how to prepare dishes that are at once nice, wholesome and economical. MRS. M. E.

EXPERIENCES IN CHURNING.

While I had a jar for the purpose, I preferred that with a plunger to do our small churning business; but our jar churn got broken, and I had to fall back upon a thermometer churn. In the fall, the butter came in from fifteen to twenty minutes, but, later in the winter, it would hardly come at all. Hot water was then poured into the place for it, and the result was that butter generally came quickly; but towards spring, and in the summer, butter would be very slow in coming, and when it did come, would not gather. I then tried putting some butter in the churn as soon as the globules of butter could be seen. At first, as I made during the hot weather a little more butter than I used, I returned to the churn each time all the butter left over; the result was, that not only was it made again new butter, but it caused the new butter to gather when otherwise it would not do so. My plan now, if, after churning fifteen or twenty minutes, no butter globules appear, I put in the *thermometer* churn some butter, and a few minutes further churning not only makes the butter come, but causes it to gather very soon.

If salt butter is thus churned over with a little cream, it becomes fresh butter; but if the butter be salt, the buttermilk will be salt, while the butter will become fresh. If I had known this fact sooner, much labor in churning would have been saved me.

I know not how it may be with others, but I feel ashamed to sit still and do nothing while I see the ladies of my family always busy, therefore, I generally, to save them, churn the butter, and have thus acquired my knowledge and experience, which, I hope, may prove of as much benefit to others as it has proved to me and mine. C.

MORE TRIED RECIPES.

I send you, Mr. Editor, a few good recipes which I have used myself for years, and know to be good. If your lady readers will try them, they will, I am sure, be pleased with them.

I can sympathize with the young housekeeper's troubles, having had a little of that experience myself. Married without the smallest knowledge of cooking, I suppose I wasted more the first three years of my married life than would have kept three small families; and oh! *such biscuits*, Mr. Editor, the first I ever made! you ought to have *seen them*. I had been married about two months, and the first day of my experience as housekeeper, I thought of course, like all fond young wives, I must have something nice for my new lord to eat, so I procured what I supposed to be a paper of cream of tartar, and one of soda, (self-raising flour was not used then,) so taking *one large spoonsful* of each, I made my biscuits, but the cream of tartar did not happen to be *cream of tartar* as I supposed, but soda; so with two large spoonsful of soda you may *guess* how my buiscuits *looked* and *tasted*. They were as yellow as gold and almost as hard! Ah, poor me! I think you could have lit a candle at my face that night. And I could tell you of a great many worse failures; but now, Mr. Editor, I would not be afraid to place my

biscuits and cake by the side of those of any of your lady readers, and I would say to your young lady readers, if you are troubled as I was, just follow my example. If you eat any good cake, *get* the *recipe*. Don't be afraid to ask how things are made, for all old housekeepers will willingly tell you all they know to help you along. So, Mr. Editor, as my recipes are such as I have gathered up and fully *tested*, I venture to send you a few.

MRS. N. S. F.

DOUGHNUTS.—Two eggs, one cup sugar, one cup milk, half a teaspoonful of saleratus, one teaspoonful of cream of tartar, nutmeg, or essence lemon; flour to make stiff enough to roll thin. Cut in any shape and fry in hot lard.

MARBLE CAKE.—*Light part:* One and one-half cup of white sugar, half cup of butter, half cup of sweet milk, half teaspoonful of soda, half teaspoonful of cream of tartar, the whites of four eggs, two and one-half cups of flour.

Dark part: One cup of brown sugar, half cup of molasses, half cup of butter, half cup of sour milk, half teaspoonful of soda, one teaspoonful of cream of tartar, two and one-half cups of flour, the yolk of four eggs, cloves, allspice and cinnamon to the taste. When put into the pan put one spoonful of the dark mixture, and then one of the light, until the pan is filled.

WEDDING CAKE.—Four pounds of flour, three pounds of sugar, three pounds of butter, two pounds of raisins, four pounds of currants, one pound of citron, twenty-four eggs, one pint of molasses, three nutmegs, one ounce of mace, add cloves, cinnamon and allspice, if you like, half spoonful saleratus, and a large spoonful cream of tartar. Bake in a moderate oven three hours. I have eaten this cake when two years old; it was almost as nice as though newly baked. It was kept in a stone jar *closely* shut up.

TEA CAKES.—Three cups of sugar, three eggs, one cup of butter, one cup of milk, one small teaspoonful of saleratus, four cups of flour, well beaten; roll thin. Bake quick.

NICE FRUIT CAKE.—One pound of flour, one pound of sugar, one pound of butter, two pounds of raisins, two pounds of currants, one pound of citron, twelve eggs, spice to taste.

CRACKER MINCE PIES.—One cup of chopped crackers, one cup of chopped raisins, half cup of vinegar, a small piece of butter, one cup of molasses, one cup of sugar, spice to your taste, one cup of water; simmer them all together, they are nice pies, and if once tried you will be sure to want them a second time. Crust the same as for apple pies.

FRUIT AND NUTS FOR ALL.

Do urge the people, Mr. Editor, to plant berry bushes as well as fruit and nut trees. Many and many a plantation and farm are as guiltless of apples, pears, peaches, figs, plums, cherries, grapes, blackberries, strawberries and raspberries; pecan nuts, walnuts, chestnuts, hazlenuts and hickory nuts, as if they cost millions, or would not grow on our soil. Cannot you manage to din into their ears that "places," with these luxuries growing on them, are twice as valuable as those "bare fields." Your valuable magazine gives you much influence. Will you not exert it in favor of these home comforts? Cotton, corn and potatoes, are the only things thought of—even groundnuts are neglected—a little trouble now would give the farmer an abundance, and leave more for the children coming on; each man should plant trees, for are we not sitting under the shade of those planted by hands long since laid to rest? We shall soon follow, and should leave fruit and shade for the next generation.

L. L.

CARBOLIC DISINFECTANTS.

CARBOLIC ACID WATER.—Dissolve one part of pure crystalized carbolic acid (which can be rendered fluid by immersion in hot water) in one hundred parts of water. Crude carbolic acid should be taken in double the quantity.

CARBOLIC ACID POWDER.—Mix one hundred parts peat, gypsum, earth, sand, sawdust, or charcoal powder, with one part carbolic acid dissolved in water, Double the quantity of crude acid must be taken.

CARBOLIC ACID WASH.—Mix one part carbolic acid with one hundred parts milk of lime.

DOMESTIC MEMORANDA.

GOOD PILLOWS.—A lady recommends oat chaff for pillows, as soft, cool and healthful. Feathers are objectionable on the score of healthfulness, especially in summer, and we should be glad to see them banished altogether from our beds. Rice chaff might serve a good purpose when oat chaff cannot be had, but it would not do so well.

CLEANING MARBLE.—Mix the strongest soap-lees with quicklime, to the consistence of milk; let it lie on the stone for twenty-four hours, then clean it off, and wash with soap and water, and it will appear as new.

A MOTH REMEDY.—According to the *Cabinet Maker*, the following is effectual: "Flour of hops, one drachm; Scotch snuff, two ounces; gum camphor, one ounce, black pepper, one ounce; cedar sawdust, four ounces. Mix thoroughly, and strew, or put in papers, among the goods."

PUBLISHERS' DEPARTMENT.

RATES OF ADVERTISING.

	1 Mo.	2 Mos.	3 Mos.	6 Mos	1 Year.	SPECIAL.
1 page.....	$25	$45	$60	$100	$180	Outside back cover
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¾ column	12	22	30	50	90	cent. added to rates.
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We never, under any circumstances, give paid-for "notices" in our editorial columns.

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10 " " " 16.
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Moneys must be sent by Draft, Postoffice Order, Registered Letter, or Express, at our risk, but at the sender's expense.

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We will send the receipts for all renewals of subscriptions in the *number* of the magazine following the date of the reception of the remittance by us. This is allowed by the Postoffice Department, and will save us considerable time and money. It is the usual custom with magazines

NOT CLUBBING WITH CHARLESTON WEEKLY NEWS.

Some time since the proprietors of the Charleston *Weekly News* declined clubbing any further with THE RURAL CAROLINIAN. We are thus unable to renew old or take new subscribers under the previously existing arrangement. We are still clubbing with many first-class leading Dailies and Weeklies through the South.

PREMIUMS.

We issue, with this number, in circular form, our list of premiums for subscriptions to THE RURAL CAROLINIAN. We will continue to add to the same from time to time.

WALKER, EVANS & COGSWELL,
And D. WYATT AIKEN.

BIND YOUR VOLUME OF THE RURAL CAROLINIAN.

To enable our subscribers to preserve THE RURAL CAROLINIAN, we will bind their numbers in full cloth, gilt back and sides, so as to make a handsome volume for $1, or we will forward the cases for 75 cents. Or, we will bind in half leather, library style, for $1 25 per volume.

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WALKER, EVANS & COGSWELL.

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WALKER, EVANS & COGSWELL,
Charleston, S. C.

FARM AND GARDEN CALENDAR FOR MAY.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance North or South of this place must make the necessary allowances for difference in the seasons; about five days for each degree of latitude.

AGRICULTURAL OPERATIONS.

Cotton will demand unremitting attention throughout the month, and any neglect now will tell badly on the crop, for it cannot be wholly made up afterwards. Let the ploughs move briskly, and the hoes follow. Break out the middles thoroughly, and leave the whole ground perfectly clean. If the corn needs attention, it may be well, in some cases, after running two furrows to each row, to put the ploughs into the corn-field while the hoes go over the crop, returning and breaking out the middles afterward. Toward the last of the month, the ploughs will have to get back into the cotton again. "Let no grass grow under your feet."

——In giving the cotton due attention, do not neglect the corn. We must have bread, whatever else we lack, and our stock must be fed. Let the cultivation of the corn be the most thorough possible, but remember that the roots run near the surface, and must not be broken; so plough shallow, or work with the cultivator.

——Sweet potatoes for the main crop should be planted early this month, if possible. Early planting is one great secret of success in making large crops. The tuber continues to grow the whole season, and the longer we can make the season the better the crop, other things being equal. After planting, the principal thing is to keep the ground free from weeds and grass till the vines shall thoroughly cover it.

—— Hands and mules must be well fed and kindly treated, if you wish willing and efficient labor. Give both time to eat and to rest, but when in the field let "lively" be the word.

GARDEN WORK.

Weeds and grass should have your first and continued attention during the month. Unless they are kept in subjection, all your previous labor will be lost, and your manure feed crops for which it was not intended.

——If you have any cabbage plants of the Green Glazed variety, they may still be set out in rich, moist ground, but other sorts will be pretty sure to be destroyed by worms. Cabbage brocoli and cauliflower seed may be sown for a fall crop. Sow in rather poor ground, so that the growth may not be two rapid. The seed beds will need watering if the weather be dry. Sow Southern grown seed for this crop.

——Celery of last month's sowing may now be pricked out. Set the plants three or four inches apart, in a moist, partially shaded situation. Seed may still be sown, but unless shaded and frequently watered, there is danger that it will not germinate.

——Kohl Rabi plants of last month's sowing should be transplanted, also sow more seeds. They will stand the heat better than either turnips or cabbages.

——Tomatoes and peppers should be transplanted in favorable weather, and watered and shaded. A heavy mulching of the ground under your earlier tomato plants will help to keep them in good condition.

——Snap beans should be planted every ten days to keep up the succession.

——Cucumbers, melons and squashes may still be planted if needed, but the sooner the better.

——In the flower garden, weeding, transplanting and watering are the principal things to be attended to this month. Everything will grow rapidly, especially weeds.

——Examine your fruit trees, and kill all caterpillars and injurious insects that may infest them. Thin out fruit if necessary, as it generally is. Remove all useless shoots from your vines.

Meredith Village Trout Ponds.

THE

RURAL CAROLINIAN.

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Practical Farming and Farm Economy.*

In the treatment of so comprehensive a subject as the one assigned for discussion to-day, it will not be expected that the writer can do more than touch upon some of the general principles of "farm economy." Having laid down what he believes to be the fundamental laws of agriculture as connected with the growth of plants, and stated some of the qualifications necessary for their successful practical application; he will endeavor to ascertain whether the prevailing practice in our community is in conformity to these laws, and to point out some of the most glaring defects of our system. He hopes, also, to show that, by the abandonment of a false system, by an intelligent application of manures, and closer attention to the minor details of farm management, it is within the power of all to attain a reasonable success, thereby advancing not only their own, but the material prosperity of all classes in the community.

The chief object of the agriculturist is to obtain, by the cultivation of plants, the greatest development of such fruits as are necessary for the food of men and animals, or the largest production of other vegetable matters used for barter, commerce and manufactures. This object can only be attained by a thorough knowledge of the nature of the plant to be cultivated; the food necessary for its support, and the circumstances most favorable to its growth and complete development. The prejudice, amounting almost to contempt, that has heretofore existed in the minds of so-called practical men, against what they style "Book Farming," is fast giving way before the material results elicited by the application of Chemistry to Agriculture.

In the animal kingdom, it is a familiar fact that the various species requires each a distinct kind of food for its support, and that wholesome and nutritious food for the one, is not only devoid of nutriment but absolutely poisonous to the other. We know, too, that certain kinds of food are better adapted than others to the development of certain parts; some being richer in ingredients for brain, others for muscle, fat, &c., &c. We are all familiar with the process of fattening hogs, assisting the action of the food found best for that purpose, by contraction of the respiratory powers and prevention of perspiration. That charcoal powder will produce such an enlargement of the liver

*An Essay read before the Cheraw Farmers' and Mechanics' Club, by Jas. C. Coit, Esq.

of a goose as eventually to result in its death, is a fact well known to all skilled in the preparation of *Patè de foie gras.* The natural instinct and taste of the animal is an unerring guide in directing it to the kind of food best adapted to its nature; and being endowed with locomotive power, it seeks that food from place to place. Reasoning from analogy, we conclude that the same general principles attending life and growth in the animal are equally applicable to the vegetable kingdom. Plants, however, being destitute of powers of locomotion, it becomes the duty of the agriculturist to supply the food necessary for its support. The kind of food necessary for the sustenance of plants, is the whole problem claimed to be solved by the chemist. This he accomplishes by a chemical analysis of the soil, and also of the stock, leaves and fruit of the plant which it is desired to grow in that soil. If the soil is deficient in any element necessary for that plant, he is able to detect it, and, knowing the chemical changes brought about by the contact of the ingredients of the manure and those already in the soil, he can prescribe the best and most economical manure to supply the deficiency.

For the disease of the human body, we do not hesitate to consult the physician, because, knowing the physical organization of man, he is able to prescribe the kind of medicine that will relieve the suffering. If, as is sometimes the case, the disease is so complicated as to baffle his efforts to discover its nature or its cause, we do not, on that account, discard his aid, because experience has abundantly shown that the knowledge acquired by the study of medicine carries with it a power for the relief of human suffering, little short of miraculous. In other words, though we sometimes suffer from his mal-practice, still on the whole it pays us to employ him.

Considering the vast amounts annually expended by this community in the purchase of commercial manures; it is of the utmost importance to us to determine what kinds are best and most economical.

It is probable that many of us each year expends hundreds of dollars for fertilizers, well adapted to some soils, but which add little if any to the increase of our crops; whereas, a better knowledge of the deficiency of our soils would have enabled us to obtain a largely increased yield at perhaps trifling cost. But, as we are not analytical chemists, and cannot determine the nature of our soils, we must resort to the expedient of utilizing the acquirements of others; we must consult the physician! We can never make an intelligent and economical use of manures until each man obtains *somehow* a complete knowledge of the ingredients of the soil upon which he wishes to produce a particular crop. And I predict that the time is not far distant, when it will be the custom of intelligent, practical men, in making their annual visits to the city for the purchase of supplies, to carry from their fields samples of the soil, to be subjected to analysis; and the result of that analysis will determine the character of the fertilizers to be used upon those fields. When we cease the hap-hazard practice of purchasing, at enormous prices, just such fertilizers as our factors choose to advance, or happen to be agents for, and adopt the more intelligent mode of buying only such as we need and will benefit our crops, then we may expect to visit the cities annually, not only with a sack full of earth, but with pockets "full of *rocks.*" He who obtains the greatest production, consistent with the greatest economy, has done much to acquire for himself the honorable appellation of a "practical farmer." He will not, however, have deserved that enviable title, unless, having applied his manure, he uses the best means to retain it permanently in the soil, and assists its action by judicious cultivation and rotation of crops. No small part of the fertilizing properties of the soil is derived from the atmosphere, and the condition best adapted to the reception and

retention of these elements, is the condition we should strive to sustain. We can do this only by a system of thorough drainage and deep pulverization. The two go hand in hand, and are so inseparable that the full benefit of the one cannot be attained without due attention to the other. These are subjects of such prime importance as to deserve the separate consideration of the Club, and are merely alluded to here; the writer being unable to do more than touch upon one branch of the subject, so little regarded, yet so much needed in this community; he refers to hill-side drainage and horizontal culture. The object of the one being to cut off from the bottom lands the flow of water brought to the surface by the out-crop of a lower stratum; the other, the gradual conveyance of the surface water to the vallies with least injury to the soil. Some of the most valuable and productive lands in this section are entirely unremunerative for the want of a practical application of the principles of hill-side drainage. With a centre ditch kept indifferently cleaned out, the owner abandons his best lands because he will not submit to the small outlay necessary to construct a good underdrain to cut off the spring waters upon the hill-sides. But the method of horizontal culture is more intimately connected with the problem we have for solution, *i. e.*, how to retain the manures and protect the land from the deteriorating effects of heavy falls of rain. In our comparatively flat country, this has heretofore been regarded as of too small importance to deserve the attention of farmers. Yet, who can travel ten miles without being impressed by the sight of the bald, barren spots in almost every field, or deep gullies washed upon every hill-side? Who that has invested largely in fertilizers, has not felt his heart sink and his hopes vanish after witnessing the effect produced by one heavy fall of rain in May or June? Who doubts that the greater portion of the soluble parts of our manures are annually carried off by the deluges of water that rush with accelerated velocity down our injudiciously laid off furrows. The loose, sandy character of our lands renders them peculiarly liable to the deteriorating process of washing.

A few dollars and little labor would enable us to lay off such water furrows, and so horizontalize our rows, as to prevent this annual waste, and preserve our lands in good condition for an unlimited time. Another rational method of preserving the fertility of our lands is by the adoption of the system of rotation. That rest and recreation renews the wasted powers and enables them to return to labor with increased vigor, is a law of nature, binding equally upon both animate and inanimate objects. The continued growth of the same crop upon any soil will eventually exhaust the properties necessary for the support of that crop, though the same land may contain a sufficiency of food necessary to the production of a different crop. The rest or recreation thus obtained, will enable the soil to recuperate by farther disintegration and absorption of the fertilizing properties of the atmosphere, &c., so as to bear again its original crop.

We conclude, therefore, the secret of great production consists in high manuring, thorough draining, with deep pulverization and rotation. If our premises are true and our conclusions legitimate, I leave it with the Club to determine whether as farmers we have faithfully adhered to these principles, whether we carry them into practice. Though we have no doubt fallen far short of their practical observance, still, on the whole, we have made fair crops of our great staple. The cotton crop of 1870 has reached a magnitude supposed to be altogether unattainable with free labor, falling little short of the celebrated crop of 1860. In the face, however, of the fact that the united efforts of the entire Southern people at production have been crowned with unexpected success, what do we find to be the condition of the planting com-

munity to-day? Let the cries of distress ascending in the Gulf States from the Atlantic to the Mississippi, and the ringing sound of the sheriff's hammer in our midst, answer the question. Our whole system of farm economy and management must be defective to the core, and requires speedy amendment, or as a community and people, we shall be overwhelmed in one common irretrievable ruin.

What is the defect? What the remedy? The defect consists in the utter recklessness with which, as a class, we stake our all, and strain our credit to its utmost, on the production of a single staple, to the exclusion of other crops. Newspaper editors and writers have, from time immemorial, been crying out against this evil, and they have pointed out the remedy; *i. e.*, Plant more corn! The advice is not less good because familiar, not less true because old. Theoretically we acknowledge it; practically we deny it. The writer believes it can be shown that we can not only raise the corn and bacon necessary for our own use, but that some of us could raise it more profitably for market than the great bacon and corn growers of the West. It is probable that upon our uplands we could not profitably raise corn for market, but upon the river and creek bottoms, we could raise it so profitably as to drive out all competition.

The average crop of the Western prairies does not much exceed that obtained from our river bottoms; while, from the price in this market, the Western farmer must deduct the cost of transportation for one thousand miles. In other words, with a yield of thirty or forty bushels to the acre on prairie land, the Western man (at 40 cents per bushel) only realizes a net profit of from $12 to $16; while at twenty bushels to the acre on our river bottoms (at $1.50 per bushel) we derive a net profit of $30. The advantage is vastly in our favor. Then, too, there is no scarcity of river bottom for our purposes, more lying idle every year in this district than would be sufficient to produce all the corn necessary to make up the deficiency in the uplands, and to supply our home market. The market value of a full crop of corn from the river lands alone would more than double that of the present cotton crop of the entire district. Considering the cost of production and present low price of cotton, the writer would suggest that, as a money crop for the river planters, the production of corn is more sure and profitable. The amount that may be produced for market can only be determined by experience in the application of improved labor-saving machinery to its cultivation. I have been told that from the plantations of an estate in this district, $1,500 worth of corn was sold last year at an average of $1.65 per bushel. This, too, I presume, without any extra effort of the manager to produce corn for market, being only the surplus arising from a fair yield of the crop planted for plantation use. This is mentioned only to show that corn, as a money crop is not to be despised. An insufficiency of bacon necessarily follows an insufficiency of corn. When we fail to produce the one, we are sure not to have the other. With fair pastures and a climate far more favorable to *stock raising*, we yet depend upon the North and West for the bacon to supply our laborers, and the beef and mutton for our tables. On most of our river plantations, with an expenditure of a few hundred dollars for fencing, and the little labor and expense of sowing small grain and grass for pasturage, we could raise corn and meat enough for market to defray all the plantation expenses; while the manures, accumulated from the stock and placed upon a few acres, would increase the fertility of the soil to such an extent that the number of bales of cotton would not be diminished, and these would be a true exponent of the profits or net income of the planter. With corn and bacon of our own raising, we would hear little talk of liens, and

have little use for factors. Selling our crops in our home markets, and buying our necessaries for cash, the amount saved could only be measured by the enormous profits we pay for the privilege of credit,—the per cent. charged on all cash advances, and the thousand and one items that accumulate upon the sale of our products in the hands of middle men, amounting in the aggregate to 100 or 150 per cent. on the amount involved. With a less area in cotton, in proportion to our means, we would have more time to devote to the cultivation of the smaller crops—peas, potatoes, etc.—the aggregate market value of which would form no inconsiderable adjunct to the gross income of the farmer. We would have more time for our own intellectual culture, the discharge of the duties we owe the community in which we live, and for the society of our friends and families.

Home influences and comforts being the most lasting and endearing, it would be our aim to make that home beautiful, bright, cheerful and happy, so that the recollection of it in after years, would enable its inmates with truth to exclaim:

"The dearest spot of earth to me,
Is home, sweet home."

American Sumac and Sumac Mills.

American Sumac is rapidly rising into importance as an object of commerce, and its cultivation, gathering and manufacture are likely soon to become extensive branches of industry, especially in the Southern States.

Sumac has always been largely used here in tanning, but until recently nearly all of it has been imported from Europe; the American species being supposed to be deficient in tannin, a result now known to be owing to want of care and skill in gathering and preparing the leaves. Since the war, more attention has been devoted to this matter, and it is now demonstrated that American Sumac, from the best mills, not merely equals but excells the best imported, as the following comparative analyses show:

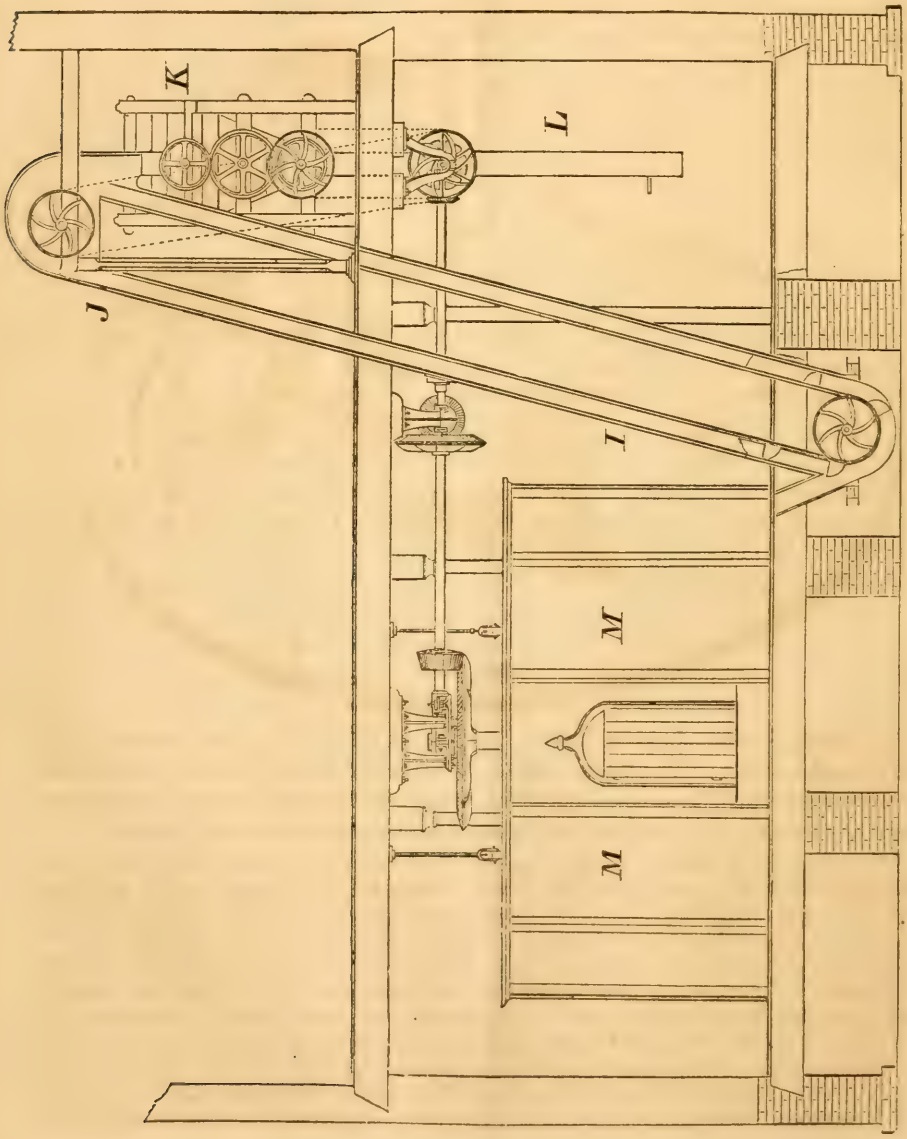
Finest Sicilian.		*Finest American.*	
Tannin	23.65	Tannin	30.00
Sand	1.00	Sand	50
Vegetable Fibre	75.35	Vegetable Fibre	69.50
	100.00		100.00

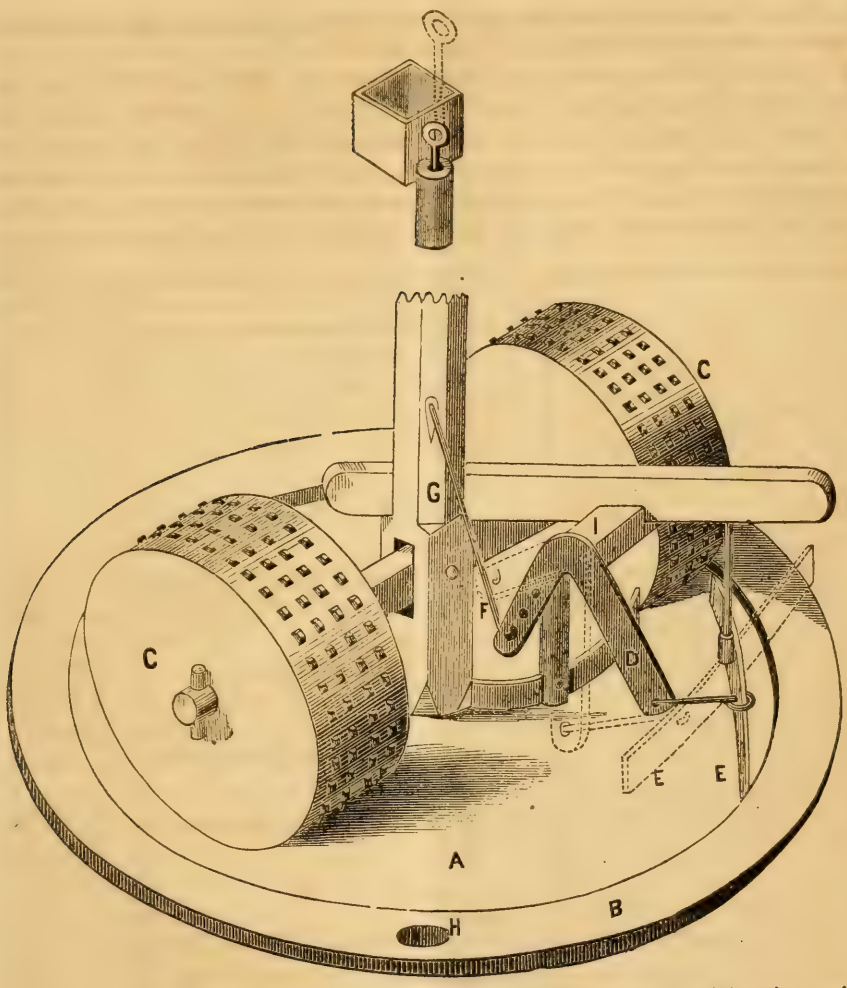
Mr. Alexander Macrae, Produce Broker, Liverpool, Eng., who has personally examined the Sumac manufactured in this country, says:

"A great revolution is about to be witnessed in this tanning and dyeing material. Supplies have commenced to arrive from Virginia, United States, the quality of which is the best that has ever reached Great Britain. The official analysis (Huson) shows that the finest brand of Sicilian, the "*Ne plus ultra*," gives 24½ per cent. of tannin, ½ per cent. sand; but the best samples of American (same analyst) yield 31 per cent. of tannin to ½ per cent. of sand. If, therefore, finest Sicily is worth 20s. per hundred weight, finest American is of the value of 24s. per hundred weight; but it is quite certain that as a rule the American will undersell the Sicilian considerably, although, as shown, the quality is 20 per cent. better. In common fairness it must be added, however, that the very *worst* tests of the American are

superior to the *best* of the Sicilian; this includes not only the sumacs of Virginia, but those of Maryland, Tennessee, &c."

The entire consumption in the United States, in 1869, was 10,000 tons, of which only a little over 2,000 tons were prepared in this country, mostly in Virginia. At present it is not cultivated here at all, but the leaves are gathered from the wild shrubs any time from the middle of July to the appearance of frost. The increased demand will doubtless lead to its cultivation as a regular farm crop. It may be propagated either by root-cuttings





or by seeds, planted in rows far enough apart to admit of cultivation with the plough or hoe. The seeds should be soaked before planting. Whether sections of root or seeds be used, they should be planted late in autumn, or early in winter, as the winter rains promote the starting of the plants.

"A mill for grinding sumac leaves," according to the Report of the Commissioner of Agriculture for 1869, "consists of a heavy, solid, circular bed of wood (marked A in the accompanying engraving) fifteen feet in diameter, with a depression around the edge (B) a few inches deep and a foot wide, for the reception of the ground sumac from the bed, and two chasers or rollers (CC) weighing about 2,500 pounds each, five or six feet in diameter, and provided with teeth of iron, or preferably of wood, thickly inserted. If the axle of a cart were set upon a pivot in its centre, the wheels of the cart would describe a compound revolution similar to that of the chasers of a sumac mill. Most mills have to be stopped to allow the unloading of the bed, but a process, exhibited in the accompanying engraving, has been patented

by Mr. Chase, of Alexandria, Virginia, which obviates this delay. The apparatus consists of an angular arm (D) attached to a scraper (EE) and worked by a lever, (F;) which passes through the hollow shaft (G) and extends to the room above, where it terminates in a handle, as seen in the section at the top of the engraving. The scraper carries the ground sumac to the opening (H) whence it is carried by the elevator, marked in the second engraving, (H,) such as is common in flour mills, to the revolving sieve or screen (K) in a room above. After screening, the sumac passes down through the tube (L) and is packed in bags, fifteen to the long ton, (2,240 pounds,) this article being always sold by that weight. The chasers and beds are inclosed in a huge case or drum, (MM,) and the grinding is done by the application of power to the upright shaft (G) between the chasers, and which moves them. The mills are fed from above. The packing is sometimes done by machinery alone. This description is of the best mills, which cost about $3,000. In Europe, and in some parts of the South, sumac is still ground by stones revolving on a stone bed, and the sifting is often done by hand."

More about Hill-Side Hedging.

The restoration and permanent preservation of the hilly clay lands of the Carolinas and Georgia, demand the attention of the people owning these lands, before all other improvements in agriculture, and it can be accomplished at a price per acre not exceeding the cost of the fertilizer expended on the acre each year.

In an article sent for publication, and appearing in the April number of The Rural Carolinian, it was stated, and I repeat it here: "A walk through *any*" (not *my*, as printed,) "hilly plantation, ditched with great care, many years ago, will satisfy any observer that the ditches have contributed very much to the ruin of the property, and the consequent bankruptcy of the owner."

The exceptions to this almost universal fact are more the result of accidental circumstances than of any special care of the land by the owner. True, the planters were not all bankrupt before the war, because they grew the commanding staple of the world, and the great increase of negro property saved them in spite of the impoverishment of their lands. If they had foreseen that nothing but their land was to be counted property, these hills would have been hedged all around, and they would not have been bankrupt after the war. So far from that, however, they had, universally, in this middle country, adopted the most perfect system for running off the soil and water, in the shortest time that could have been devised, and it has never stopped running off yet, and in some places never will. Now they grumble that drouths are more destructive than formerly, and that their bottom lands are covered with banks of sand! Is that very marvellous? Thinking men now see the short-sighted policy of hill-side ditching, and that the only ditch wanted is one to keep the water of heavy rains outside of the cultivated fields.

The wise planter wants now to hold and to utilize every drop that falls on his crops; he wants it absorbed by his deep-ploughed soil, ready for a drouth; and if it flows at all, which it must, to some extent, in spite of subsoiling, he wants it to spread the sand over the galled spots, and to leave it there. Subsoiling will accomplish but little, *unless he narrow the space over which the water is to flow and prevent its accumulation in currents, or break up the current before it washes to the subsoil.*

There is a way to do this, and it will strike any man at once who will give it a thought. It may be done as effectively as a terraced garden, and at small cost. By *building hedges or brakes* (no matter about the name) *along the hill-side, so nearly on a dead level, that the flow of water will be checked, and the current broken up by each hedge, leaving the soil, if it brought any down, on the upper side of the hedge, there to hold the next deposit, and so on, for a distance out from the hedge, that will astonish the closest observer, if his attention has never been called to it.* In close clay soil it does not necessarily make a level deposit above the hedge, but *grades* the hill-side, if the hedge is on a dead level. No matter how much ground the hedge occupies, let it stay there, for it will pay the owner, if he takes care of it, five hundred per cent. per annum for the ground it uses; and it matters very little the first year or two what the hedge is made of; old-field pine logs or brush will do. After the first or second year, and when the rich soil has accumulated on the upper side, the farmer can exercise his own fancy and plant a hedge of Osage Orange or Cherokee Rose, that a dog or a thief cannot pass through, for the soil will be rich enough to grow anything. This system of hedging refers to clay lands that were once good. Any old planter knows the difference in fertility of the loam of heavy clay land and of light sandy land, and he will not waste much time on sand.

When the water spreads and passes through the hedge, and before it gathers to do any harm, it is checked by the next hedge below; and so on to the foot of the hill. So far from quick and heavy showers doing harm, the planter controls and uses every drop that falls. These hedges may be near together and seem to take up too much land; but when it is considered that there are no gulleys to cross or to turn on, that the first rows on the upper side of the hedge may be run the whole length of the hedge and need never be changed, laid off for convenient and quick work, so that the most stupid ploughman cannot blunder, one is apt to find that he has gained in surface of ground cultivated, instead of losing by the hedges.

These hedges are a permanent investment of labor and brains, compounding interest at the rate of twenty per cent. per annum on the land protected, and should, therefore, be laid with mathematical precision.

How far they may be used for fences depends upon the lay of the land and the good sense of the owner.

The Southern planter seems slow to comprehend the fact that farmers, all the world over, grow rich, not so much by the annual market value of their crops, as by the enhancement of the value of their land. In old countries,

this enhancement is effected by the amelioration of the soil. In new States, by projecting railroads, etc., and inviting settlement. But the rule is universal, that the farmer who expects to grow rich must depend mainly upon raising the market value of his land. *It is stupid gambling for a cotton planter, with all his advantages over the Northern farmer, to base his calculations for a fortune upon his crops alone.* No matter how successful he may be, it is the same old story of "the goose and golden egg."

Desponding men may say, "If this is true, it is better to go to a new country." No; it is a great mistake for a poor man to leave this old country, where its lands, once rich, are now cheap, and only begging a little attention and patience to become rich again, and its healthy climate, its adaptation to all the staple crops, and its geographical position, its convenience to sea and mountains, schools and colleges, will surely draw attention and enterprise. It is a great mistake to leave this for any country, North or West, at this juncture. It is cheaper and safer, and altogether better, to bring your old land up to a market value of $20 per acre by your own energy and enterprise, than to pay out $20 per acre for lands in the West or Southwest.

Fairfield County, S. C., April, 1871. ——— ———.

"Book-Farming" and its Practical Application.

"A hint to agricultural writers," by H. W. Long, of Florida, published last fall, awakened reminiscences.

I have been, ever since I became a planter, a reader and admirer of agricultural periodicals. Commencing with that of John S. Skinner, I have always patronized some one or other of them. Notwithstanding the disrepute that book-farming has fallen into, being stigmatized by a class of well-read and intelligent men, I contend that in nine cases out of ten, it is the fault of the person making the practical application, and not the fault of the agricultural journal.

The opponents of "book-farming" have some "knock-down arguments" to back their assertions, and this is one of them: "Look at A," they say. "He is a scientific farmer; if you will just listen to him he will tell what he will do next year, and what he will make, by figures; one bale of cotton per acre, twenty-five bushels of corn, and all other things in proportion. Now, sir, did he do it? And did you ever know him to make corn enough to supply his plantation?" Just the reverse! he generally planted very early, just to keep from losing his seed, as it was a select variety. Here I must give my own observation for years past, and up to the present:

Half of the corn planted is ruined by injudicious working, and a great deal blasted by late working, when it would really have made more without the last working, weeds, grass and all. Why? Simply because ploughing or hoeing corn after it has tasseled, will fire the crop, and nothing will prevent

the disaster but rain, following immediately to settle the earth, and then it is doubtful. Is this the fault of book-farming? I think not. I have never read a treatise on the culture of corn that advised any such course; though they differ much in the mode of culture recommended, and properly so in many instances, as different soil and locality call for different treatment; so in this instance the fault is with the planters.

Book-farming is the practical experience of educated, scientific men, in all branches of agriculture. I have been told by editors that it is with difficulty that they can induce practical, successful planters to write for their journals. There are several reasons for this. That class of men are generally self-made; they have character, pride and self-reliance, and sense enough to know that, though they have experience, they have not the knowledge of scientific technicalties that would enable them to express their ideas in such a manner as to avoid criticism by scientific men. Now, sir, this class of men are benefitted by book-farming. Why? Because they have discrimination and judgment to know what is adapted to their locality and what is not. I doubt very much whether you will find any considerable number of that class of men buying many of those labor-saving implements, used at the North and Northwest. There are some few of them that will do in our fields, and but few. The Southern improved implements are best adapted to our wants.

There is a similarity between physic and farming. What will cure a Dutchman will kill a Frenchman. I knew a gentleman who bought a plantation, Broad River low ground, formerly cultivated by a gentleman from the swamp region, who well understood the necessity of thorough draining and high culture, and it returned *him* remunerating crops. The purchaser, having strong faith in his own judgment, having grown gray cultivating the soil, came to the conclusion that this ditching and hauling up high ridges to plant on, and the mode of culture to carry it out, was unnecessary and expensive work, and consequently abandoned it. The consequence was, he made one crop on the land in question, and, after several years' failure, sold out, not being able to make a support. This Dutch treatment killed the Frenchman. It succeeded on the ridge, but would'nt do in the Swamp. Here was a palpable want of discrimination. With him no other way will do for the gate to swing than the way "Daddy" had it.

The omission alluded to by H. W. Long, in giving all the particulars in respect to carrying out any plan or system of working, is often made by practical men from the supposition that as it is so plain, to themselves, and common, that all understand it, and it would seem like presuming on their ignorance to go into details so minute, when really they are necessary to a new beginner; nor have I ever read any writer on agriculture who went into details so minute as Stephens, in his "Book of the Farm," and for the above reason—to assist young beginners to carry out his system, and to enable them to use the implements then in use to the best advantage and in the right place. The same necessity now exists with those beginning in the sunny South. Those to the "manor born," as well as the foreigner, want this kind of instruction.

The question is, will they take it? and commence where thirty, may be fifty years' experience has left off, and profit by the hard-earned and dearly bought experience of those who went before them, and improve, and progress, and profit by saving that which would have to be spent in obtaining similar knowledge; or will they do as the large majority do to-day, that is, with all the light of science and established facts before them, and in their power to know, simply by reading, to avoid ruin in most things pertaining to prosperity in this life, "go it blind," and learn the lesson that all must learn sooner or later?

To return to corn. Two years ago, during a drouth, a friend consulted me in respect to a field of corn, reported to be perfectly green and beginning to tassell, but full of grass. I advised him not to plough or hoe it; but he was of the opinion, that to clean the grass out would make better corn, and acted on his own judgment, and killed his corn; and so it will be to the end.

HENRY W. PARR.

Broad River, near Alston Depot, S. C.

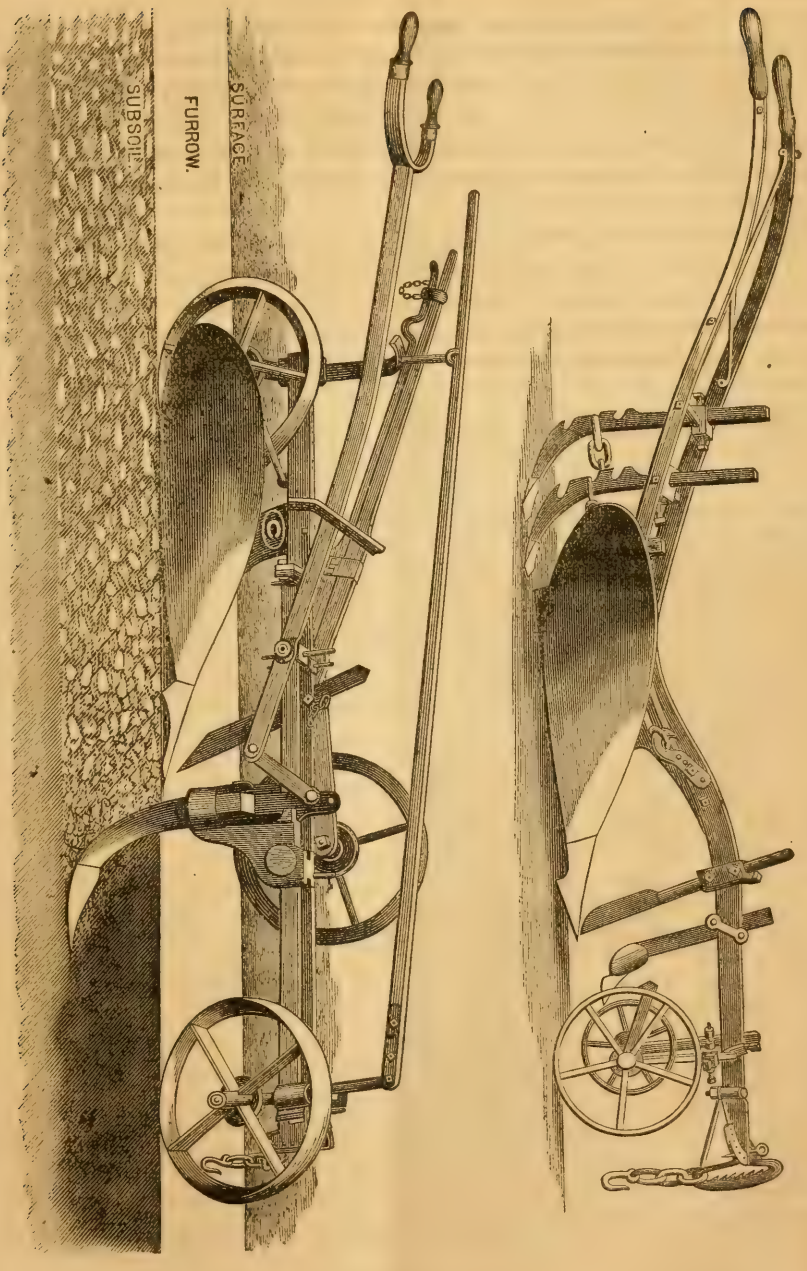
British Improvements in Ploughs.

For the purpose of comparison with American improvements, and to give the general reader an idea of the style of popular foreign ploughs, engravings and descriptions of two recent British inventions are herewith given.

The double-furrow plough (of G. W. Murray & Co.) is intended for turning one furrow-slice, with a subsoiler in front for loosening the subsoil in the bottom of the furrows behind the furrow-horse. The *Gardeners' Chronicle* says of it:

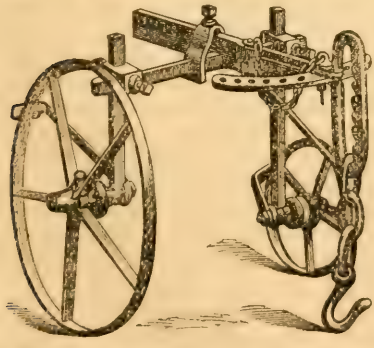
"This is a much more effective plan of subsoiling than the old one, as the furrow-slice is turned over the newly loosened subsoil, thus leaving the land in the best possible state for aëration and drainage, with the fertilizing processes that follow. When the work was done on the old plan, either with two teams—one in the subsoil plough and the other a common plough—the furrow-horse of the latter team trod and consolidated the newly loosened subsoil. Even the feet of the ploughman holding the subsoil plough did much harm to land naturally adapted to run together in the bottom, and besides better work done, there is a great economy of horse-power, fully as much as when turning two furrow-slices. By removing the subsoiler, and fixing abreast, the implement is converted into a furrow-plough. At the Oxford meeting of the Royal Agricultural Society, this combination of plough and subsoiler received the highest commendation of the judges. Whether used in this combined form or as a double-furrow plough, the implement is remarkably light in draught, thus proving that it is constructed on sound principles. The simplicity of the mechanism and plainness of the illustration render a detailed description unnecessary. The lever on the left hand regulates the depth of the furrow slice, and throws the implement out at the headland, by means of the land-wheel. The long lever to the leading furrow-wheel is for steering, and the two handles form a third lever for adjusting the depth of the subsoiler."

The upper figure represents the Messrs. Ransome, Sims & Head's first prize plough at the Newcastle and Leicester meetings of the Royal Agricul-



British Ploughs.

tural Society, furnished with grubbers—the invention of Mr. Robinson, a practical Middlesex farmer. "For deep ploughing these ploughs were never beaten, and as deep ploughing is now the order of the day, and shallow ploughing the exception, the implement may justly be termed 'the champion plough of England.' It would take a very elaborate series of mathematical drawings to show how this plough turns the deep furrow-slice, and lays it in the manner it does, leaving a clear open furrow for the next turn. We here allude to what the judges said in their report at Leicester, and, perhaps, we should not be thanked were we thus to lay open the grand secret in the manufacture. But be that as it may, the Smithfield Club show is not the time for the solution of such a question. But speaking generally, the wrought-iron beam, instead of being a single bar, is made double at the lower end, where it embraces the body or frame of the plough. By this construction the beam acquires a degree of stiffness sufficient to obviate vibration, while it at the same time admits of simpler fastenings for the coulter and steam coulter, thus further increasing stiffness. It is a well known fact that any spring or vibration of the beam greatly increases draught. For a similar reason the handles are braced by diagonal stays. By this formation of the beam and handles, the greatest strength is obtained by the less weight of iron. The plough is fitted with a lever neck by which more or less pitch is given to the share. The two grubbers are not rigidly fixed, but have sufficient play to admit of their going laterally when they come in contact with a stone or any similar obstruction in the land, and to give them strength the other way, they have each a drag-chain fixed in the body. Their object is to break pan and gradually deepen the soil, and also to loosen the soil below in ploughing in manure with a shallow furrow. For this latter purpose they are admirably adapted, for the manure laid thus upon a loosened and properly aërated soil is the best possible state for thorough incorporation with the land; whereas the manure, when turned down into a hard or close bottom, is often more than half lost. The following figure is a front view of the wheels on a larger scale. The judges, in their report of the Leicester trials of the Royal Agricultrial Society of 1868, spoke in the highest terms of these wheels. They are constructed on the same principle as carriage wheels, the hubs being bored, and the axles turned and capped so as effectually to keep out dirt, and they are easily oiled without the wheels being taken off. They are attached to the beam at each end of the cross-bar in a very simple and efficient manner, the cross-bar being held in its place by a clasp. An adjustable socket, with a vertical and horizontal hole, is put on to each end of the cross-bar. The stalks of the land and furrow wheels are passed through the vertical hole, and the socket works horizontally on the cross bar. The set screws which holds the stalks in the sockets are very accessible, little time being occupied in altering either the width or depth. The hake is also furnished with a fine adjustment, so that the plough can be made to run perfectly true, thereby contributing greatly to reduce draught.—*Monthly Report of Dept. of Agriculture.*



Tile Making and Tile Draining.

We trust that the example of Mr. Crayton, of Anderson, in introducing a tile-making machine and commencing the manufacture of draining tiles, will be followed by many, in different parts of the South. To be supplied so cheaply as to encourage their general use, they must be made in the neighborhood in which they are required, long transportation adding too much to their cost. There should be a tile machine in every neighborhood where the proper material for making tiles abounds. Mr. O. R. Broyles lately set forth, in the *Anderson Intelligencer*, some important considerations in favor of underdraining, and we give here an extract from his article, regretting that we have not room for the whole of it:

"It may appear paradoxical to most minds to assume that the underdraining of our uplands will be scarcely less remunerating than on our low grounds, and still more that draining them should be insisted on as a resource against the drouth of summer. But facts are stubborn things. Experience has proved it. This problem, though novel in conception, is nevertheless susceptible of a satisfactory solution. Reason and common sense will, of course, suggest to every one the necessity of guard drains in connection with underdrains. They are inseparable auxiliaries. Nor is subsoil ploughing less important. The theory of their joint operation is, that guard drains, judiciously constructed, may be relied on to intercept and convey the superabundance of water of the heaviest rains to the margin of the field. Deep ploughing will, for the most part, absorb what falls between the guard drains, which, by the action of the tile below, is very speedily absorbed from the surface. By this means, the deeply ploughed and well pulverized soil retains, for a much greater length of time, that open, porous and sponge-like condition, so well calculated to promote and perpetuate the formation of moisture, whether arising from the earth or applied to its surface by dew or rains. Whereas, in the absence of these precautionary measures, the superabundant water of the heaviest rains is hurried over the surface of the field to the rich level lands or flats, where the fertilizing constituents of the soils have been long accumulating, and there detained in a state of stagnation until removed by the slow process of solar evaporation.

"It will be admitted, on all sides, that the soil in such localities is in a condition most unfavorable to the growth of crops, and that although the yield may be much greater than on the more elevated surrounding, even that is no proof but that by underdraining it would have been increased fourfold. The roots of plants are slow to penetrate, nor can they absorb nourishment from a soil too often saturated with water, nor can crops be greatly benefitted under such circumstances by the use of approved fertilizers.

"In low grounds the theory and advantages of underdraining are much more easily comprehended. The lands are made wet by the outcropping of springs from the surrounding uplands, and often in the interior of the swamps. In situations where the bottoms are high and dry, an open ditch around the field may be relied on to effect the necessary drainage. But in a vast majority of instances, open ditches are inconvenient and objectionable. They occupy too much space, and impose an intolerable amount of labor annually to clean them out; and the result is, that by a neglect of this important measure, the lands are broken and cultivated when too wet, and in a few years they become cloddy, cohesive and unproductive.

"The astonishing yield of our branch and creek bottoms when fresh, proves that they contain the elements of fertility in a high degree, and they continue to produce fine crops as long as the vegetable mould which prevents their cohesiveness lasts. With the destruction of the mould, the humus of the soil ceases to exist, and as this material is the principal supply of carbon to plants, sterility must be the result; and lands in this condition can never be rested until thoroughly drained, not because the mineral manure or inorganic constituents of the soil have been destroyed, for most of them are indestructible, but because they are locked up in clods that are impenetrable to the roots of plants.

"Tile draining on such lands is, beyond question, a resource against all existing evils. There are, nevertheless, thousands of acres of low grounds in this country reduced to a condition approaching sterility, yet such lands will be found to possess astonishing recuperative powers. When properly underdrained, water will seldom be seen on the surface, even during the winter months. If broken up and bedded in the fall, the clods will be pulverized by frost and freezing. The fertilizing materials they contain will be placed in reach of the roots of plants; grass and weeds will reappear in quantities sufficient to lighten the soil and re-supply humus, and the means of progressive improvement permanently established."

More Truth Than Poetry.

If there be not "more truth than poetry" in the following capital effusion, (which we clip from the *Macon Telegraph*,) we are no judge of either. There *is* more in the man than in the land.

JONES.

I knowed a man, which he lived in Jones,
Which Jones is a county of red hills and stones,
And he lived pretty much by gettin' of loans,
And his mules were nothin' but skin and bones,
And his hogs was as fat as his corn-bread pones,
And he had 'bout a thousand acres 'o land.

This man—which his name was also Jones,
He swore that he'd leave them old red hills and stones,
For he couldn't make nothin' but yellowish cotton,
And little o' that, and his fences was rotton,
And what little corn he had *hit* was boughten,
And dinged if a livin' was in the land.

And the longer he swore the madder he got,
And he riz and he walked to the stable lot,
And he hollered to Tom to come thar and hitch,
For to emigrate somewhar whar land was rich,
And to quit raisin' cock-burs, thistles and sich,
And wastin' ther time on the cussed land.

So him and Tom they hitched up the mules,
Pertestin' that folks was mighty big fools
That 'ud stay in Georgy their life-time out,
Jest scratching a livin', when all of 'em mout
Git places in Texas whar cotton would sprout
By the time you can plant it in the land.

And he driv by a house whar a man named Brown
Was a livin', not far from the edge o' town,
And he bantered Brown for to buy his place,
And said that bein' as money was skace,
And bein' as sheriff's was hard o' face,
Two dollars an acre would git the land.

They closed at a dollar and fifty cents,
And Jones he bought him a wagin and tents,
And loaded his corn, and his wimmin and truck,
And moved to Texas, which it tuck
His entire pile, with the best of luck,
To git thar and git him a little land.

But Brown moved out on the old Jones farm,
And he rolled up his breeches and bared his arm,
And he picked all the rocks from off'n the groun',
And he rooted it up and ploughed it down,
Then he sowed his corn and wheat in the land.

Five years slid by, and Brown one day,
(Which he'd got so fat that he wouldn't weigh,)
Was a settin' down, sorter lazily,
To the bulliest dinner you ever see,
When the old 'oman said sorter doubtingly,
"Yan's Jones, which you bought his land."

And Jones it was, standin' out at the fence,
And he hadn't no wagin, nor mules, nor tents,
For he had left Texas afoot and cum
To Georgia to see if he couldn't get sum
Employment, and he was lookin' as hum-
Ble as ef he had never owned any land.

But Brown he axed him in, and he sot
Him down to his vittles smoking hot.
And when he'd told his Texas troubles o'er,
Brown looked at him sharp and then riz and swore
That, "whether men's land was rich or poor,
Thar was more in the *man* than thar was in the *land*."

Cotton in Hills--Saving Seed.

In the April number of THE RURAL CAROLINIAN, the editor expresses the wish that some of his readers would report the result of experiments in planting cotton in hills; and, as I have experimented in this mode of planting for the past two years, I will with pleasure, as near as I can, give the result, together with a few of my reasons for preferring this mode.

This I would have done before now, but, as the editor justly observes, "it is difficult to break up the old routine in cotton planting," and I supposed it would be time thrown away. In fact, the remark will apply with equal justice to corn, and to almost all our leading crops. By the way, I was much pleased with the suggestion in regard to the selecting and saving of *seed corn*, which plan I have been following for several years, with very marked results. I have now some as fine seed corn as any in my neighborhood, and expect to report in due time the result of this year's experiment in that direction,

and also to furnish the editor with a specimen of the seed. I pursue a similar mode in saving cotton seed. My plan of selecting them for planting for sometime has been to go through my cotton field in person and select the most prolific stalks, without regard to variety, until enough is obtained to plant a patch kept for that purpose. This crop furnishes me with seed the following year. In the meantime the work of selecting for my seed patch goes on the same as the year before. This is not as troublesome as it would at first appear, and nothing of the kind pays better. The first year it occurred to me to pursue this plan, I commenced selecting from stalks with not less than twenty bolls, but I soon found it would take up too much of my time, and I accordingly lowered my standard to fifteen bolls to the stalk. During my last year's selecting, I found more stalks with thirty and forty bolls than I could find with twenty the year I commenced this plan. It is true my land was some better, but not enough so to account satisfactorily for the difference in production. I much prefer this system to purchasing improved seed at exorbitant prices, as I am fully convinced that more productive seed is thus obtained. But I have wandered, and will now return to my subject, trusting, Mr. Editor, as your remarks provoked it, you will pardon the digression.

Two years ago I planted about an acre and a half of cotton in hills, after manuring tolerably well with stable manure, thinning to two plants, and was so well pleased with the result of my experiment, notwithstanding a bad stand, that the past season I planted nine acres with even more satisfactory results than the year before. I had fully intended to plant my entire crop in hills the present season, and I am only prevented from doing so in consequence of the backwardness of my planting operations, it requiring more time in preparation than the old system.

The piece of ground referred to, in which I grew my cotton seed the past season, was laid off in checks about three feet each way, and is part of a field purchased by my father in 1818, being at that time nearly worn out; and has been planted successively by us, at various intervals, from that time till the close of the war without manure. Since then I have commenced a system of improvement, and gathered from it the past season four hundred pounds of lint cotton per acre. I think, too, that the yield would have been more if it had been some wider apart in the hill. The proper distance to plant must, of course, depend upon strength of soil and quantity and quality of manure used; but, in a soil of ordinary fertility, three feet each way will give very satisfactory results; while, if the soil is very productive, even four feet will not be too far apart. I must not, however, be understood as advising the adoption of this method of planting in all soils. For instance, I would not adopt it in a very poor soil without the use of some good fertilizer. But where manure is used, or, in the absence of manure, a good soil be planted, I think this plan is to be preferred for the following reasons:

After the ground is prepared for planting it requires less labor, as it can be more easily cultivated with the plough, thus requiring less hoeing. Being

wider apart than the usual manner of planting, two plants may grow in one hill without injury to each other, and will not be crowded by the cotton in the adjoining hill before it commences to fruit and has obtained strength and vigor sufficient to prevent injury.

There are often unproductive stalks in each hill—in fact, I believe this is invariably the case—and if only one be left in thinning, it may be one of these; whereas, if two be left, the chance of obtaining a fruitful one is thus doubly increased. If only one be left, however, and it prove a healthy plant, nothing will be lost. I picked from one stalk, not more than three feet high, the past season, one hundred and ten bolls, in a place where five years ago I should be safe in saying that number could scarcely have been picked from twenty stalks.

In using manure, a uniform application is highly important; and by this mode of applying it, any desired quantity may be used with perfect regularity.

I might state, before I close, that one of my neighbors, who saw my crop while it was growing, was highly pleased with the plan, and is now preparing to plant all his crop in hills.

I intend the present year, if possible, to note more accurately the result of this plan of planting, and expect to let you hear from me more in detail at the close of the season. I trust, also, that many more of your readers will report the results of experiments through your valuable magazine.

S. G. HENRY.

Columbia, S. C.

Liscard Farm, Buckenhead.

As many of our readers may feel interested in an account of a model dairy farm, we give the following description of the above, as we saw it in 1853:

Across the river opposite Liverpool, but a little distance from the ferry, is the "model farm" as it is called. It consists of a number of long, low sheds, built of brick, containing, each, about fifty fine milch cows, all standing in large double stalls chained two and two to the rack, say, twenty-five or more on each side facing each other, at a distance of about ten feet apart, looking across the alleyway or entry. These houses are comfortably finished, well ventilated with windows provided with dark curtains. The cows are in fine condition but not beefy. They stand up to the knees in clean straw which serves for bedding as well as cud, or as the French have it "*pour s'amuser.*" There is a long low trough before them, extending the entire length of the shed, which answers the purpose of tub and manger both. At a certain hour, say eleven o'clock, the doors are closed, the curtains dropped, and no one is allowed to disturb their ruminations. Two hours are allowed them for rest, and during this time almost every cow may be seen lying down or dozing. At one, the doors are thrown open, the windows too, and hand-carts brought

in through the alley, filled with clover and grass which they toss with pitch-forks on either side into the troughs, having taken care, however, first to pump a full supply of water into them, which having a gentle declivity, acts as a rivulet, the water rushing along and carrying with it whatever of food may remain unconsumed, and so cleansing the trough entirely. Pure water is considered a requisite for milch cattle. This is the only food given them except in the winter when carrots and other roots take the place of grasses. No peas or grain of any kind do they taste, and I was told that each cow would give the richest milk on this food for three years or thereabout. When they were dry they were then in good condition for the butcher.

The sheds are built mostly upon the side of a hill, so that one floor is higher than the other. Under these floors are kept a number of hogs in pens, extending outside a little ways, forming each an area as it were. These hogs are provided with cast-iron troughs made like spoon-baskets or knife-trays, the divisions coming up like the handle but not reaching the botton, into which their food is put, and I could not help observing the wisdom of the plan, for piggie could not root his neighbor, or spoon out his sop all over the table-cloth, if he had one. These were fed mostly upon sour milk and clabber, large vats of which I saw in the corners of the building.

In the centre of the enclosure was a deep pool or well, into which all the slops and washings of the stables emptied. This stuff was forced by an engine through flexible pipes or hose long enough to extend out into the fields, all over the growing crops, thus furnishing a liquid fertilizer, which freshened and invigorated the grasses. There were many buildings besides these sheds, containing quarters, offices, etc. I think it was only a milk dairy, that no cheese or butter was made there, milk and cream being the chief objects of the farm. Quantities of these were sent daily to Liverpool, and a handsome return realized.

Little Things.

It is the cant of the day to speak disparagingly of the old planting system of the South. We are sick and tired of it. Under the old system we had cheap and reliable labor, cheap land and plenty of it, light burdens in the way of taxation. Under the old system cotton was our money staple—it was cash in hand, and it was cheaper to grow it and exchange it for such articles as it was not convenient for us to produce, than to attempt to make everything we needed. We ask no better evidence of the truth of this than the prosperity and happiness of our people and their influence in the halls of Congress. But all these things have been changed, and we might as well realize the fact that we are no longer a planting people, a happy or a prosperous people.

We are poor, and under every effort to keep up the planting idea we are daily, as a people, growing poorer at home, while we are making richer

those who oppress us. Every dollar we make goes to enrich the Eastern manufacturer or the Western stock grower.

We must reform this altogether. We must attach more importance to little things. If we are not able to go into manufacture on a large scale, we should endeavor to encourage small industries. We have the best timber in the world—an abundance of cheap water power—why should we send North for tubs, buckets, axe helves, clothes-pins, wash-boards, biscuit rollers, trays, chains, tables, buggies, carriages, and many other things, the mere transportation of which is almost as much as the cost of their manufacture?

Can't we grow broom corn? Can't we make very nice baskets out of the common willow, (nice work for the women,) and save millions sent North for willow work? These small industries make up much of the wealth of other sections, and are no small item in the way of causing our poverty.

We must try to raise more provisions. Can't we raise more poultry, sheep, goats, hogs and cattle? If we can't grow corn, can't we find some substitute in a variety; oats, peas, artichokes, grass and sorghum, and thus work through without dependence upon the prairies of the West? Can't we produce more milk and butter? With the finest climate in the world, can't we grow fruit for market, or can't we find money in market gardening and growing garden seeds? How many small industries may be introduced and encouraged, calculated to add to our prosperity and happiness as a people, and it is high time we were about it in earnest.

HARD TIMES.

Ramie as a Forage Crop.

This is the third year since I planted some of the Ramie seed which I got from the Department of Agriculture, at Washington. The bunches have increased from a single plant until they now cover about four feet of ground, and have from eighty to one hundred stalks each, which are now three feet high and leafy. From this I would infer that one plant at a distance of six feet each way would soon cover the ground, and without expense in cultivation, as mine has had little or none. The soil in which it is, is good, and it is so vigorous that it out-grows everything else and rapidly takes possession of the locality.

I have not used it in any way except to feed my milch cow, and it is on this account I trouble you with this communication. It is eaten as rapidly as the Rescue Grass, a fine patch of which I have also, and which horses and cattle are very fond of. The Ramie seems to be preferred by the cow, and she keeps in fine condition, giving a quantity of rich milk. It may be that in time, after long use, its effects will be otherwise than at present indicated; but if it continues to be as good food as I now think it is, we shall have in this plant an article for stock-feeding, which the South has been needing for many years, and not as yet discovered. The growth is so rapid after cutting,

and its strong hold on the soil, and tendency to spread, with its suitability to a warm climate, make it just what we wish; and if it should not prove profitable for its fibre for want of cheap machinery to prepare it for market, it will certainly pay well for grazing purposes.

Barnwell, April 15th, 1871. J. ALLEN DUNCAN.

Rice Chaff as an Economical Subsoil Drain.

Some years back, my attention was attracted by seeing some rice chaff taken from a post hole, dug where a portion of a lot had been filled, years before, with chaff. The chaff taken from the hole was in a perfect state of preservation. The idea suggested itself to my mind that if a spongy substance, such as chaff, could keep its own buried at a depth in the earth for a number of years, if it could not be made to subserve a purpose in drainage.

Fully impressed with this idea, I began to make experiments. I had a piece of rich bottom land, about a quarter of an acre, on which the spring water from the hill would find its way to the surface, and render this piece so wet that all the surface drains I could make would not effectually drain it, and after a hard rain I would lose all my plants.

I determined to try draining with chaff. I set to work and dug six ditches two feet and a half wide, in depth a few inches above the bottom of the open surface drain, in length the width of the piece; at the heads of each ditch I put down two small posts, one on each side, and knocked up a few old pea crates and used the laths, nailing them across the inside from one post to the other, just far enough apart to keep my chaff from dropping out when the ditch was filled. After filling my ditches, I got a few loads of pine trash (any dead grass except nut or joint grass will do) to make a matting that would keep the earth, which was to be put back, from settling in the chaff and making a mass which would stop the spring water from trickling through.

It is three years since the above was done, and at this time the water is still running through these ditches; the heads have all rotted away, but the chaff is just as sound as if it was just put down, and has not lost its sponginess, and I believe never will.

To-day I had occasion to dig a post-hole in my yard, on a spot which I had filled with chaff in 1861, (ten years ago,) so as to raise my yard, and the chaff was taken out scarcely changed even in its color, to say nothing of its sponginess, confirming me in my belief in its utility in the use to which I have put it.

I am fully aware that subsoil drains made of timber will last many years, and perform effectually (if put down right) all that is required of them. My object in communicating the foregoing experiment was simply to suggest a cheap, and (by my experience) a lasting and effectual drain, in places where the distance to carry the spring water is short—say not over two hundred feet. Other experiments I have made with chaff, but as yet have not had time to test whether they will be anything more than

April 21st, 1871. CHAFF.

Department of Horticulture and Rural Art.

The Cultivation of Cauliflowers.

PRELIMINARY OBSERVATION.

We place here an observation which always appeared to us, in practice, of great importance in relation to the employment of amendments and manures. These precious means of improving soils are too often used to pure waste in garden culture. Let us suppose, that to ameliorate 1,000 square yards of sandy land, intended for the cultivation of cabbages, cauliflowers, etc., we have three cubic yards of dried mud. If this is spread broadcast, it is very evident that the sand will receive throughout an infinitesimal quantity, and that the tap root of the cabbage can receive very little benefit. But, after having properly prepared the soil, we mark with lines the places of each plant, and the amendment is divided among these places, each plant will grow in a mixture where the clay will be in much larger proportion; the difference of the product in the two cases will be such that the extra labor will be well paid. The same is the case in the employment of manures. Some other vegetables, artichokes for instance, are set thirty to thirty-six inches apart each way; one can readily see how much manure will be lost in their growth, if, instead of applying it directly to the plants, it is spread broadcast, as if it were a question of sowing small grains.

CAULIFLOWERS.

Our vegetable gardens contain few vegetables as wholesome as the cauliflower; its cultivation, equally profitable to the market gardener and pleasant to the amateur, will always succeed with a little care; ignorance of the proper processes, and particularly the fear of taking a little more pains than are ordinarily bestowed upon vegetable gardens at a distance from large towns, are the only causes of the failures of country gardeners, who think that when they purchase cauliflower seeds from Paris or Holland, and treat them like common cabbages, they ought to have heads like those of the laborious market gardeners.

The cauliflower, botanically speaking, has no varieties nor subvarieties; it is itself only an accident or sport, without any botanical characters that are peculiar to it except its head of etiolated or weak flowers, which constitute the eatable portion. In market garden culture cauliflowers are divided into tender, half-hard, and hard heads.

1st. The *tender-headed* cauliflower is the easiest of all to cultivate; it requires less time to form its head, it is not fastidious about the quality of the soil; but in market gardening the other varieties are preferred to it because its head, rather open, is very apt to break and run, which destroys its value. The plant is small, its leaves are narrower than those of the others; and this variety is best suited to the amateur's garden.

2d. The *half-hard headed* is the most cultivated, and, all things considered, the best of all. The plant is strong, with long, wide leaves, rather slow to form its head, which, in return, keeps much longer than the tender-headed, and with good cultivation acquires a larger head.

3d. The *hard-headed* is the least cultivated in the market gardens around Paris because it occupies the land too long a time; its head takes a despairingly long time to form, but when formed it becomes larger, whiter and more firm than that of either of the others. In some private gardens some hard-

headed cauliflowers are sown for a late crop, as they succeed all the others, and resist the first cold spells even in the open air.

SOWING.

The droppings of the cow, without any litter in it is for the cauliflower, during the first part of its growth, the best of all manures. The market gardeners around Paris do not use it, their other crops always leave free space enough upon their old spent hot-beds, which have the same effect upon sowings of cauliflower seed. The same, however, is not the case in the country where gardeners, who incur the expense of two or three hot-beds, are considered by their neighbors as on the high road to ruin. In the country where cattle are plentiful generally, it is very easy to collect, either in the cowsheds or pastures, several wheelbarrowsful of cow droppings, which it is best to allow to dry in the air in order to pulverize it before using. Three wheelbarrowsful are enough for a bed twelve feet long by four and one-half or five feet wide, for which about one ounce of seed is quite sufficient. The preparation of the land and the distance of the benches are exactly the same as for cabbages, with this single difference, that the cow droppings replace the manure, and the seed ought to be covered by filling the trenches with it. This is also an excellent method of covering cabbage seeds. The seedlings are the less injured by the turnip flea in proportion as their vegetation and growth are accelerated; the growth of sowings of cauliflower seed in cow droppings are equal in the rapidity to those sown on the best spent hot-beds. The sowings of cauliflower seeds are confined to three principal seasons. The first sowings take place towards the end of February or beginning of March; these are the most profitable, but the plants even when protected are sometimes killed by late spring frosts.

The cauliflowers of this sowing are fit for use in the fall. The second sowing takes place at the end of May, in order to furnish their heads at the end of autumn; these have to contend against the heats of the summer, which, however, are not fatal to them when the trouble is taken to water them sufficiently. The third sowing is from the 15th to 25th August, to furnish plants destined to survive the winter; the heads produced by these last sowings, are fit for use early the following summer:

TRANSPLANTING.

The cauliflower seldom passes from the seed bed to the place which it is to occupy until its full development, without having been for a time in a nursery, an operation which, in all cases, is necessary to the success of its culture. The plants destined to pass the winter in the open ground are transplanted into a sheltered border, with a southern exposure; these require vegetable mould rather than manure, in order that they may not be caught in too forward a state of growth, which would cause their destruction, ordinarily the plants are set in groups close together, in order that they may be protected by bell or hand glasses, but it is better to give them more room, and protect them only with mats or covers of any cheap material. The best plan is to set them in a cheap hot-bed, taking the precaution to uncover them by night as well as by day, whenever it is not freezing, as they are easily destroyed by too much heat. The other transplantings take place when the plants attain four or five inches in height; the plants which it is intended to set out in spring, ought to receive very little water until the moment of transplanting, and then watered freqently as long as they remain in nursery; they are set three or four inches apart each way.

PLANTING.

Most of the cauliflowers that are eaten in Paris are set out in a hot-bed; this is the next common way of using a hot-bed after it has yielded a crop of

melons, or cultivations that leave them free early. The soil that suits cabbages, suits cauliflowers equally well; they are set in rows about eighteen inches apart both ways. However the plants may have been grown, it is important to take them up with as much manure or mould as possible; the rapidity with which they take root secures the success; unless the weather is very rainy, a light watering is given to enable the plants to take root; then the plants are allowed to suffer from want of water for about fifteen days. Experience has proved that after having thus languished for a while, they produce more promptly heads of better quality, and are less apt to break their heads than if watered freely immediately after being set in place.

DETAILS OF CULTIVATION.

Cauliflowers require the more abundant watering the more advanced are their heads; towards the end, they require at least two waterings daily, and if the weather is warm or very dry, they will take three or four. In these waterings, the water ought not to be poured upon the heads, which ought to be protected equally against the sun and the rains; for this purpose the heads are covered with one or two leaves taken from the stalk below. The heads may be left uncovered at night unless it prove rainy; on these precautions mainly depend the success. When from any cause the heading of cauliflowers is retarded until fall, or winter comes earlier than usual, it is easy to hasten the formation of the heads, by drawing the earth from around the roots, applying of rich or concentrated manure and cover it with the earth, raising it slightly; in this case, it is necessary to water still more freely than usual. Peruvian guano or cotton seed would probably answer for this purpose.

KEEPING.

The sowings of cauliflower ought to have been so arranged, that in November there should be beds fit for use and others with heads about half grown; this is the provision for winter. Cauliflowers that are fully headed may very well be kept for one or two months, simply placed upon the shelves or tables in a very dry place where frost cannot reach them. They may also be suspended upside down, from nails, or shelves, or walls, always taking the precaution to cut off the stalk immediately at the head of the roots, and cutting off the leaves, leaving them about three or four inches long on the side which touches the shelf or wall. When it is wished to use or sell them, it is necessary one or two days beforehand to immerse the stalks in water up to the heads; they are then almost as good as when freshly gathered, provided they are immediately consumed; for if they are kept forty-eight hours longer, they melt in cooking and leave only a bundle of strings, which are of no use. This is what happens also, when they have been kept too long. Cauliflowers after having been kept a certain length of time more or less long, lose the power of being refreshed and consequently remain stringy.

As nothing external indicates this state, the purchaser may easily be deceived, but he ought not to be deceived more than once; and the gardener who has any self-respect ought, for his own sake, to avoid so blamable a deception. Those cauliflowers which had their heads half formed ought to be taken up before the first cold, with as much earth as possible to their roots; their leaves are trimmed and they are placed in some simple shelter (dry cellar or other) exactly like cabbages. The heads will continue to grow without, however, attaining the size they would have attained in the ground under favorable circumstances; but as they will keep until much later in the winter than those which were gathered fully headed, they always command a good price and are a precious resource for the amateur gardener. The English gardeners do not transplant the cauliflowers that they intend to keep during the winter; they sow them in place on a good exposure, during the

first days of July, about one foot apart each way, and water them moderately in order to obtain the first heads towards the end of September; it is always the tender headed varieties that they cultivate in this way. Towards the 1st November these cauliflowers have attained their full size; their outer leaves are taken off, they are lifted with all the earth possible on the roots, and placed under shelter in some place where they will not be hurt by frosts, most frequently in a dry cellar. We do not think it necessary to abstain from transplanting cauliflowers sown in July in order to obtain the same results; the transplanting, which hastens the formation of the head, can, on the contrary, only prove favorable. [*Translated from "Maison Rustique," by R. C.*

Glory Pea—Clianthus Dampierii.

This splendid plant is a native of New Holland, and belongs to the natural order of *Leguminosæ*. It has hitherto been considered very difficult to culti-

vate, but upon a better acquaintance with its habits, it has proved quite the contrary. Sown in the open air, on a dry, warm sunny border, in May, it has grown luxuriantly, and bloomed profusely all summer, with ordinary treatment. It requires but little watering—indeed, in the earlier stages of its growth, scarcely any—for when two much water is used, it will damp off. The soil must be of a light sandy nature.

This plant is one of the most beautiful and striking in cultivation, and until recently, has been confined principally to the green-house; but as it has, as already stated, been proved to succeed admirably out-of-doors, especially in the South, must become exceedingly popular. The plant attains a growth of about three feet in height, with neat compound leaves, and drooping clusters of large *rich scarlet*, long petaled pea-shaped flowers, three inches in length, each flower being picturesquely marked with a large, black, cloud-like blotch in front.

We are indebted to H. A. Dreer, the well known seedsman and florist, 714 Chestnut street, Philadelphia, for the above beautiful illustration, as well as some seed of this novel plant.

Arnold's Raspberries.

Fig. 1.

Mr. Chas. Arnold, of Canada, who has been so successful in producing hybrid grapes, has also experimented on the raspberry plant, for the purpose of getting new and superior berries. His No. 1 (Fig. 1) is a pale yellow variety of good quality, and the plant is very stocky and apparently prolific. No 2 (Fig. 2) is also a very promising variety of the same color. We have not fruited either of these here, but hope next season to be able to report upon them in reference to their adaptation to our climate.

Fig. 2.

Dairy and Stock Department.

Fencing Stock vs. Fencing Crops.*

Your committee, to whom was submitted the question of the propriety of enacting stock laws and abandoning the fencing of crops, respectfully report:

That the present laws of enclosure in South Carolina, are burdensome upon our agriculturists, while those for preventing trespasses are very defective or wholly inoperative. Legislative preference for any branch of industry is not less unjust than impolitic. The considerations of expediency, which occasioned preference to grazing over tillage in the early history of our State, unjust at the time in theory, are now injurious in practice. Though landed interests should be placed under the sacred protection of the law, yet every man should be privileged by law, to have and enjoy his own, alike as to real or personal property. Personal property, as apparel, provisions, stock, implements, etc., such even as is not of immediate, or even any use, is not common property. Yet all land is common property, unless under a strong, close, five or six foot fence. Landed property is practically outlawed.

Individuals should be restrained from trespassing on the property of others. This is a principle in the laws of all civilized nations. Yet land and crops are deprived of this protection. The law permits any one to consume or destroy all crops, natural or cultivated, not thoroughly guarded, without any redress for the injury done. In newly and sparsely settled communities, with small clearings compared to the forests and wastes, which may be valuable as pasturage, it may be cheaper to fence the arable spots, rather than the extensive range. Usage has reconciled us to this practice, though all the available fertile land is now cleared, the remaining woodland, too poor generally to clear, being worthless as range, while the expenses of enclosing have increased by the extent of clearings and the diminished extent and character of our forests. Yet, this expensive fencing is exacted of the landowner that other persons may not be deprived of the use of his unguarded lands for range.

The principle on which fence laws are based is adverse to all laws in general, as well as to justice and the rights of property. It does not punish or forbid wrongful invasions of landed property, but it requires the owner to guard and protect it, and holds the aggression as justifiable and blameless. The trespasser is not required to prove anything; the whole burden of proof lies on the sufferer. To recover damages, the fence must be strong, sound, of legal height and closeness throughout. Any defect or decay, whether by wind, fire, floods, hunters or anything else, precludes damages. The stock must be got up and confined, and the owner notified within twenty-four hours. If the claim is sustained—a thing next to an impossibility under the rigid requirements of the law—a fine of twenty-five or fifty cents may be collected, though the damage and annoyance may be tenfold. No recourse has, probably, ever yet been had to this law, or ever will be. The law-abiding character of our people, and fear of public indignation, accounts in a great measure for the circumstance that fences do serve and fields are not more frequently depredated on, as well as an apprehension of such damages to stock as is not authorized by law, but is far more effectual. While the farmer can forbid

* Report of a Committee of the Beech Island Farmers' Club.

any person from ranging or passing over his land under heavy penalties, and may send the trespasser to jail if he persists, he cannot prohibit his stock, but at his own peril, except by a lawful fence.

The perfection of agriculture may require numerous fences and subdivisions of fields for rotation and pasturage. Under a long established government, as Great Britain, whence we borrow our fence law system, and especially with primogeniture and entail, the transmission of vast accumulated landed estates for successive generations, undivided, may justify the expense of live fences or very enduring dead ones. Our fence laws favor a more rapid, if not so extensive accumulation to large land owners and capitalists, but only at the sacrifice and annihilation of the valuable class of small farmers. It is because of the increased expense of small enclosures, it taking but double the fencing to enclose four times the area. An equal proportion of timber land to farmers of 100 acres and of 1,000 acres, which may admit of some improvement of the timber growth on the larger after meeting the requirements of fencing, would in a few years sweep away all the forest of the lesser farmer. The larger land-owner, devoting less labor, as well as timber, to fencing, can give more attention to improving his land, and the small farmer, when compelled to sell—perhaps for want of timber, or inability to improve his land—can only sell to some such capitalist. The law of descents with us only counteracts this accumulation of land, while the frequent subdivisions and sales of land—every generation or oftener—prevents the practical use, to any great extent, of live or enduring dead fences. Yet the tendency of fence law has been truly said to be to "amalgamate the small freeholds, and bring them under one fence and one owner."

If left to his choice would not every farmer prefer to avoid the expense of fencing his crops, and get full restitution of damages if his neighbor's stock injure or destroy them? Can any farmer choose voluntarily to be compelled to fence out his neighbor's stock? A large proportion of farmers keep only work animals, milch cows for family use, and few hogs or sheep, if any. Many enclose them all the time for security, convenience, as advantageous to the stock, and to save their manure. The miles of outside fences, if dispensed with, would save labor and expense that would enable all to have good pastures, or enriched spots for soiling purposes. It would also enable the farmer to clear good spots of land in detached parcels, as across public roads, along winding branches, between barren ridges, etc., which are often useless on account of the cost of fencing them; or the good and the bad land must be taken as it comes, to get fields in a body.

The lack of complete agricultural statistics, and the varying conditions as to the number, extent and shape of parcels of enclosed lands, facilities and quality of timber, value of labor for erecting them, etc., render it difficult to estimate the total investment in the State in outside fences. From the latest census report at hand, that for 1850, it appears there were in round numbers about 30,000 plantations and farms in South Carolina, averaging about 133⅓ acres improved land. Should the improved land of each such farm have been in the most compact shape in one body, it would have required about one and three-fourths miles of outside fencing to enclose it. But owing to the irregular shapes of such tracts and clearings, and innumerable detached fields, double, if not more than this extent of fencing may be safely estimated, leaving out of consideration the extensive outside fencing on land returned as unimproved. The usual farm fence is the worm or zig-zag fence, requiring about 8,000 rails to the mile, costing variously from one dollar to five dollars per hundred for timber, splitting, hauling, clearing fence row and erecting. Perhaps two dollars per hundred would be a safe average esti-

mate. The amount of land covered by fences and lost in turning—not including the margin too frequently surrendered on the fence row to scrub bushes and briars—would be about three and one-third acres to the farm. Our improved lands, apart from buildings, worth, in 1850, not exceeding an average of ten dollars per acre, would scarcely average in market above five dollars per acre now. Estimating the improved lands of the State at this time as of the same extent as in 1850, we would have the following result from these calculations: 4,000,000 acres of improved lands, worth $20,000,000, enclosed by 100,000 miles of outside fencing, the fencing costing for its original construction $16,000,000, besides encumbering and rendering valueless 100,000 acres of land worth $500,000. The duration of such fences vary from four to fifteen years, according to timber and other circumstances, apart from casualties of floods and fires, but the annual cost of repairs cannot be less than ten per cent., or $1,600,000, equivalent to a tax of forty cents an acre on all improved lands in the State, or eight per cent. of its value, being just eight times the rated tax, State or County, we will have to pay on the same property next year. To this should be added at least seven per cent. interest on the original cost, making the tax fifteen per cent, or seventy-five cents per acre. Experience has established that this tax is lighter than the damages that would result from insufficient fencing for protection. Yet it is probable that all the stock permitted to run at large in the State, for whose benefit this burdensome expenditure is exacted, if taken direct from their several ranges and sold in market would scarcely realize the expenses of our fences, or even the half of it.

Extravagant as these statements may appear—and they are, probably, far short of the actual facts in the case—the estimates of other States more than corroborate them. Some years ago the cost of the fences of the United States—"those unproductive monuments of art"—were estimated by Burknap at more than twenty times the amount of specie in the country. More recently their total first cost is placed at near $1,300,000,000, and the roadside and boundary fences as exacting an annual tax, averaging $1 50 on every acre of improved land in the country. Nearly a generation ago, Mr. Biddle estimated the cost of the fences of Pennsylvania at $100,000,000, and the annual repairs at $10,000,000. Yet Pennsylvania had then but about double the amount of improved land of South Carolina. Gen. Worthington estimates their cost in Ohio at $115,000,000. Ohio had about two and a third times the improved land of South Carolina. With about three times the improved land in New York, its fences cost, according to Robinson, $144,000,000. Mr. Prince estimates the cost of annual repairs on the two-thirds of the fences of Maine that are made of wood, on farms of over twenty acres extent, at near $2,000,000. The total improved land of Maine is about one half that of South Carolina. Illinois is said to have ten times the fencing of Germany, and Duchess County, N. Y., more than all France. A narrow path serves to divide farms in France, Germany and Holland. A beautiful system exists in some portions of Europe, in lieu of fencing, adding a grace and beauty to the landscape, and often a source of income instead of unprofitable expense. Proprietors are required by law to mark the boundaries of their lands by trees, and to plant fruit and ornamental trees at stated distances on public highways, and the traveller often passes for miles under trees bending with fruit, or affording a grateful shade. We will conclude, deferring a discussion of the advances of enclosing stock, owing to the length of this report, which the experience of all individuals and communities who have practiced it has established beyond question, with a summary from the Illinois Agricultural Report, for 1864: "The fences of the United States have cost more than the

houses, cities included; more than the ships, boats and vessels of every description which sail the ocean, lakes and rivers; more than our manufactories of all kinds, with their machinery; more than any one class of property, aside from real estate, except it may be the railroads of our country."

E. S. HAMMOND.
WM. PINKNEY STARKE.
THOS. W. WHATTEY.

Is the South a Stock Country?

The above caption is a question of considerable latitude, and in its general sense scarcely admits of discussion. Some kinds of four-footed animals are grown in every section of the South, but whether remuneratively or not, is yet to be proven. While I believe cattle raising to be of doubtful policy anywhere in the cotton belt, it does not follow, that this same region is ill adapted to the rearing of all kinds of stock. Beef-cattle and the grasses are reciprocal adjuncts to each other, while "hog and hominy" are proverbially associated together. Not so with the sheep. This animal seems to have no place especially assigned it in the agricultural world, though it supplies, more variedly than any other, the wants of man. In my judgment it is of all domestic animals most peculiarly adapted to our Southern country, and particularly to the cotton belt.

Throughout the South, it has become a trite saying, "the times have changed." It should be universally admitted, that we must change with the times. Not that planters should follow other pursuits, and become as many of them are wont to do, "dealers in wares;" nor that we should abandon the culture of our staple crops, and rush headlong into all kinds of new enterprises, substituting manufactures for planting here, and converting large plantations into diminutive farms yonder, that the whole world, and "the rest of mankind" may be invited to come and live among us. But the times demand that we should diversify our labors. To use a homely expression, we should not put all our eggs in the same basket. We of the South are, and of right ought to be, a rural people. Our's is an agricultural country. Our versatile climate, the spontaneous growth of our forests, the varied products of our fields, all entice us to this enobling vocation. But heretofore we have been too singular in our adaptability. We have been reared under the conviction, that except through the cotton field there is no path to wealth and comfort. This delusion must vanish. There are other golden fleeces than that of king cotton.

Agriculture is a multifarious science, and under existing circumstances none of its departments are more profitably inviting than sheep husbandry, which always has a twofold purpose—to grow sheep for mutton, and to grow sheep for wool. In the vicinity of cities, or with cheap transportation and convenient markets, possibly mutton is preferable to wool. But throughout the South the chief object should be to grow wool, while auxil-

iary to this, enough mutton should be slaughtered to supply local demand. I have known stock men to oppose the latter idea upon the ground that wool sheep are not mutton sheep. This is a strange notion. While it is evident a sheep grown exclusively for mutton may be a coarse, hairy animal, I cannot understand why a sheep with a fine fleece may not yield equally fine mutton. Experience teaches me, that sheep which shear a good quality of wool can be converted into mutton, fat, tender, juicy and delicious. We Southerners, who are, perhaps, the greatest meat gormands in the world, have never had a peculiar fondness for mutton. Indeed, many persons decline eating it at all. This is a mere distaste, which is rapidly disappearing, and annually this excellent article of diet is becoming more popular, because more delicate and healthful than either bacon or beef. Its economy, too, is an item, for a fat mutton may be killed and eaten by the planter and his dependents, when the weather would not warrant his slaughtering either a beef or a porker.

Annually we have it experimentally proven that two bales of cotton can be grown upon a single acre of land. If our system of cotton culture were so generally improved as to make the average yield of our cotton fields a single bale to each acre, instead of one bale from three to five acres, as is the case, one-half the cotton area could be devoted to small grain, and the remaining half made to produce as much as we could gather. This small grain area would economically grow sheep enough to supply all the woollen factories in America. The cotton crop of 1870 (over 4,000,000 bales) has impoverished those who produced it, and cheaply clad the balance of Christendom. Had the State of Arkansas alone devoted but half her cotton area to sheep, the clip would have defrayed expenses, and her cotton crop been a surplus income. With scientific culture this remark is applicable to any one of the older cotton-growing States.

Wool can never be a drug on the market, for woollen fabrics are as necessary to the human family as bread; and even here in the "Sunny South" woollen textiles make less oppressive clothing than the silky lint to which we are such abject subjects. The United States Government properly appreciates the value of wool, for it protects it by a tariff which of itself would be a remuneration to the Southern wool producer.

If *economy* be the watchword of the Southern planter, he should, by all means, grow sheep. The average annual keep of a flock is a mere nominal cost, not fifty cents per head, simply because they require feeding but, perhaps, two months in twelve. The "old fields" of the South, (otherwise an incubus to every plantation,) with the gleanings of the stubble fields, will feed and fatten the flock of him who owns the land between 1st May and 1st December. Rye or oats sown on ordinary land in October, will pasture three sheep to the acre from 1st December till 1st March, and then produce an average crop, if occasionally relieved by the cotton fields, where sheep do well on half-grown bolls, dead leaves and small cotton limbs. From 1st March till 1st May they will thrive well on cotton seed alone. There is no

theory in this routine, for it is my annual custom, with a flock of about one hundred, that costs me no money, and but little time or trouble. I would not have any one believe there are no vexations, losses or expenses attached to sheep-raising; but I do assert that to the practical stock-raiser throughout the South, there is less trouble, less expense, and more net profit for the investment in sheep husbandry than in any other branch of the stock department of agriculture.

Sheep have ever encountered the prejudices of Southern planters, while their natural enemy, the dog, has always received favors from the white man and bread crusts from the negro. Despite all this, however, sheep are rapidly growing in popularity, and ere long they and their products will be among the staple articles of Southern trade. Their future importation into the South may be gradual, but it is certain, for they are the immigrants which will revivify Southern agriculture, and compensate Southern industry and energy.

Pure blood, fine-wool ewes can be imported into the South for from five to seven dollars each. Introduced in October, they should produce no lambs the first season, because climatization would be sufficiently trying upon their constitutions without being taxed for reproduction. Besides, in northern climates lambs are dropped in April and May. In the South those are the healthiest lambs, and make the most robust sheep, which are yeaned in December or January. Ewes imported in the fall, and sheared the following May, would yield sufficient wool to pay twenty-five per cent. on the original investment; and should any die, the loss is not total, for the wool from a dead sheep is as valuable as that from a live one. The following winter, or fifteen months after their importation, these ewes, *if properly managed*, would produce one hundred per cent. of lambs. This result might be anticipated almost certainly. In 1867 I bred fifty ewes to a single ram, and weaned fifty-four lambs, after losing four by accident. Last fall I bred forty ewes to another buck; two of the ewes died in labor, seven failed to breed, and from the remaining thirty I weaned forty-five lambs.

Every one who has handled much stock, well knows that the importation of a single male sometimes costs as much as to import half-a-dozen animals. So sure am I that Merino sheep are by far the most lucrative and economical immigrants that can be brought into South Carolina, that I submit the proposition in good faith to the planters of the State, to import next fall, through a joint stock company, organized for this purpose, from 1,000 to 10,000 pure blood Merino ewes. It can be done to advantage; and he who invests in such a scheme, *if he has the sheep properly attended to after their importation*, will never regret, but always prize the investment. Who will respond? More anon.

D. WYATT AIKEN.

A San Francisco paper says there are 800,000 peach trees in California—enough to furnish 100 pounds annually to each inhabitant. Peaches sell for about five cents a pound at wholesale—an acre yielding about $600.

How to Prevent the Galling of Horses' Shoulders.

"An ounce of preventive is worth more than a pound of cure."

As the weather begins to grow warm, farmers will often be annoyed by the galled shoulders of their horses.

There are few things more painful to look at, than a poor horse wincing and baulking at every root which comes against the plough, while the ploughman is slashing him with the line and goading him into a passion, for his restiveness under the torture of a sore shoulder.

The planter must look to these trifles himself. He may rest assured that Sambo will never trouble himself further than to cram a handful of mullen leaves or old rags under the collar at the very point where they should not be put.

In using a new collar, it is best always to wet it thoroughly before you put it on the animal. A few hours use will give it a set to the peculiar formation of the shoulder, which it will always keep. The same collar should always be used for the same horse. There is no worse practice than shifting gear upon a plantation. Every horse should have his own gear, and it should never be used for another, and every laborer should be held responsible for its condition. We prefer the common bark or shuck collar to any other kind.

If the shoulder should become galled, a pad of cotton may be put on so as to keep the pressure off the sore. A little neat's-foot oil applied every day will heal it up. It is best, however, when the first appearance of a bruise is noted, to apply spirits of turpentine. But it is better still, to prevent such mischief. We always keep at the stable a bottle of vinegar with a few spoonsfull of alum dissolved in it, and require the shoulders to be washed with it when the horse comes in at noon and night. If it be inconvenient to use this solution, a strong decoction of oak bark will answer a very good purpose. This astringent preparation toughens the shoulder and prevents the galling, and if a little oil should be applied when the galled part first appears, the animal can be worked and the sore healed perfectly in a little while.

A Northern Trout Farm.

One of the most delicate and beautiful of all fish is the brook trout, the favorite alike of the angler and of the epicure; and, fortunately, this is one of the best species for artificial breeding, wherever clear, cool, running water abounds. Our upper country is well adapted to it, and we have not the least doubt but that its propagation may be made profitable there, if properly managed.

Among the many nurseries and fish-growing establishments in the Northern States, where this fish is bred for profit, is the one represented in our frontispiece, situated at Meredith Village, N. H. It shows what can be done with a

small stream of cold water in a proper location. It is thus described in the Report of the Agricultural Department for 1868:

"The ponds are so small, and yet so populous with thousands of trout and salmon, that may well serve to illustrate the wonderful facility with which these fish may be reared, in suitable water, with some attention and feeding. The accompanying wood-cut (see frontispiece) shows the relative size and form of the ravine itself, the ponds, raceway, etc. The first pond, about the size of a city house-lot, twenty-three by one hundred feet, contains thousands of trout from one to two years old, which, as seen by the writer, sporting in water so clear that every one was visible, and crowding one another in their graceful and constant movements, presented a scene of natural grace and beauty rarely equalled.

"The temperature of the water is forty-eight degrees in winter, and the uniformity of temperature is no less remarkable than the purity of the water.

"The lowest of the three ponds, which is the largest and deepest, is occupied by the fish of three or four years, weighing from one to three pounds. At a recent inspection, a small dip-net, at a single sweep, while the speckled beauties were competing for an award of minced liver, was seen to rise half filled with a struggling mass of well-grown trout. From this pond a fishway (as shown in the illustration) leads to the brook below, by which many wild trout ascend and fall into a box, from which they are taken and added to the general stock.

"Just below the hatching-house, between the first and second ponds, a raceway is adapted to the uses of a fish nursery, and Mr. Robinson has contrived a feeding apparatus, which consists of a box, or miniature raceway, in the bottom of which slits of three or four inches in length are cut obliquely through at intervals of a few feet; and through these apertures the food is distributed by a gentle stream of water, which is kept constantly flowing through the box. It is curious to observe the young fry, as they frequent the space beneath these apertures, and seize upon every atom of food which falls into the water; even cleaning away the sand and gravel which covers the bottom of the raceway in their competition, in which they imitate the greed and voracity of pigs feeding at a common trough.

"Another feature of their establishment is the preparation of artificial spawning beds, in which the trout may deposit their ova naturally. They consist of a series of screens, the lower one with very fine meshes, the upper with coarser ones covered with clean gravel or small stones. Upon the latter the parent fish make their nests in the spawning season, the female expressing the ova, and the male throwing the milt, just as they are accustomed to work in the natural stream; and the fertilized spawn, falling through the first screen, rests securely upon the second or lower, which is removed to the hatching-house to be watched and waited upon until the hour of hatching arrives."

The *Technologist* says: "One cord of wood cut and split fine, and corded up beneath a shelter while it is green, will furnish more heat after it has become seasoned than two cords of the same wood which has been continually exposed to the alternative influence of storms and sunshine."

Petroleum may be applied with excellent advantage in the extirpation of the dry rot, it being only necessary to paint the surface of wood thus affected with the petroleum. A solution of carbolic acid, however, answers the same purposes, and involves much less danger from fire.

Department of General Science.

On the Possibility of Forecasting the Seasons.

Supposing that the forecast of the seasons would be a matter of as much interest to the farmer as the forecasting of storms and gales to the navigator, I send the following extracts, taken from the University rain-gauge register:

It will not be out of place to mention here, that storm warning signals have been established by the Governments of the United States and Great Britain, which foretell the direction and probable violence of an approaching gale, and in some instances, when the signal stations are distant, as from the coast of Texas to the Lakes, the probable duration. These signal stations are either connected with, or are in the neighborhood of, telegraphic lines. When a storm approaches any one of these stations, its direction and force is flashed along to all other stations; its violence and direction recorded at those points falling within its path, and, from repeated observations, its direction of approach, although that direction is not in a right line from the point of the first observation, is known, and signalled as a storm forecast to the shipping at the various ports in the centre of its track. The first signals hoisted on the coast of England were ridiculed by the old salts, who had more faith in the Flying Dutchman than in landsman's weather wisdom; and as for science in clouds and gales, they believed as much in it as some farmers do in agricultural conventions and book-farming; but time, experience, wrecks, taught Jack Tar lessons. He now thinks, when warned by a storm signal, that the quarter-deck shows wisdom in ordering the fo'castle to pay out the cable, house spars and topmasts, clete all home, even when the sky is cloudless and the streamer kisses the main-top-mast-head in a dead calm. At the beginning of these observations, fifty out of one hundred warnings proved true. The old salt could guess as close as that, but time, experience, and care in making these observations, advanced the claims of the originators of the system, and in England, out of one hundred signals last made, eighty odd proved correct. Numbers of ships and lives were saved; and now underwriters, shipmasters, and old salts believe in storm forecasts ashore as they did before in barometers and thermometers afloat.

I have written the above to show, that if ordinary seamen, the most superstitious class of men known, have been taught to believe in the forecasting of hurricanes and cyclones from observations made by landsmen, the synonyme of contempt in the forecastle in matters relating to winds and gales. Surely the farmer should have some faith in the observations which are of the first importance to his success in agriculture, if not as to the sailor a question of life and death.

The observations recorded from rain guages in the United States, runs back in some localities, more that thirty years; during which time, the fall of water per annum varies but slightly, one year with another; we have then

the right to conclude, that a certain known quantity of water is due the earth, that if it does not come at one season, during autumn or winter, it will come in spring or summer, and hence the forecast of the season.

It is the common expression of farmers in referring to a particular year, as the dry or wet year. There is no such thing as a dry or wet year, though there are dry and wet seasons. The reason of the mistake is, that farmers observe weather closely only during the growing of the crop, after harvest they pay little attention to rains and drouths.

In examining the extracts below, it will be seen how the rain guage at Athens, Ga., coincides with the seasons generally throughout the Southern States; that with the dry summer of 1869, the winter before was wet; that with a little more rain than the quantity due in the fall of 1869 and winter of 1870, we had very little less rain than was due for the summer months of that year, yet in each year the same quantity of rain had fallen; hence we conclude, that as the past autumn and winter were excessively dry, the spring and summer months will be excessively wet. I had very little faith in rain charts at the beginning of these observations; I have now implicit faith, and as the old salt strips his ship to meet a gale while in a dead calm, I would, if farming, ditch the hill sides in a winter drouth.

Extracts from the University Rain Guage Register.

Rain fall Autumn 1868	12.122	inches.
Rain fall, Winter, 1868 and 1869	14.908	"
Rain fall, Spring, 1869	13.861	"
Rain fall, Summer, 1869	5.844	"
Rain fall for the four seasons	46.755	"
Rain fall, Autumn, 1869	8.435	"
Rain fall, Winter, 1869 and 1870	12.614	"
Rain fall, Spring, 1870	11.086	"
Rain fall, Summer, 1870	13.259	"
Rain fall, for the four seasons	45.394	"
Rain fall, Autumn, 1870	7.059	"
Rain fall, Winter, 1870 and 1871	10.789	"
Rain fall, March, 1871	4.385	"
Rain fall for above	22.233	"

If we take the mean of the years 1868–'9 and 1869–'70, we find the quantity 46.073 inches. The charts give 47 inches. Deducting the fall of rain for the present series of observations 22.233 inches from the mean fall, we have 23.840 inches yet to come. The fall due the spring months is 10 inches, but 4.385 inches came in March; this deducted from 10 inches leaves 5.615 inches for April and May; this added to the quantity due for summer which is 15 inches by the chart, make 20.615 inches; but 23.840 inches is actually due, hence the difference, 3.225 inches more than the mean quantity due for Spring, and Summer *will come* between this and September next.

The summer of 1869 was, as farmers and planters reported from every quarter, excessively dry; this rain guage reached six inches and eighty odd thousandths, and over forty-six inches for the year.

The summer of 1870 was said to be rather wet for the crops; this guage gives 13.259 inches; the fall for the year 45.394 inches; two slight snow storms not accounted for, and one observation lost by displacement of the apparatus by some thoughtless boy.

From the foregoing it follows that the coming summer must be excessively wet, not less than 15 inches, probably more, unless the three inches due, falls in April and May.

Will it be thought presumptuous now to say, that low lands planted in cotton this year will fail unless the ditching is thorough and complete; that grain will pay better than cotton on such lands: that on high lands, rakes, mules and ploughs will be required to keep down the grass; that it will be more expensive to keep fields in tilth this year than for the crops of 1869–'70.

The area covered by the charts, for which the observations answer, extends through Upper and Middle Georgia, South Carolina, except the coast, North Carolina, Middle and North Alabama, the same for Mississippi, Louisiana, Tennessee, North-east half of Texas, and Southern part of Kentucky.

From a desire to call attention to the feasibility of forecasting seasons as well as from motives of courtesy, I have sent a copy of this paper to each of the following publications: *Southern Cultivator*, and *Southern Watchman*, Athens, Ga.; *Southern Farm and Home*, Macon, Ga.; *The Planter*, Atlanta, Ga.; The Rural Carolinian, Charleston, S. C.

JNO. G. BARNWELL,
Librarian University of Georgia.

Athens, Ga., April 7th, 1871.

The Potash Salts of Stassfurt.

By reference to a map of Northern Germany, the reader will see a nearly flat basin, extending from the neighborhood of Magdeburg to the east and south of the Hartz Mountains, in the direction of Schönebeck, Stassfurt, Halle, Sulza and Erfurt, the last two places lying to the north of the Thüringian Forest. This region, drained by the waters of the Saale, a tributary of the Elbe, has long been known for its rich, saline waters, some of which spring forth naturally, while others are pumped from the depths of artesian borings. The well which was begun at Stassfurt in 1839, with a view of determining the presence of rock salt, afforded first, in 1843, at the depth of about 1,000 feet the evidence of salt. Subsequently, after passing through a thin layer of calcareous clay, a bed of rock-salt of over 1,000 feet thickness was discovered. The saline, obtained from a depth of 1,350 to 1,851 feet contained 30.29 per cent. solid ingredients in solution, by far the greater part of which

were chloride of magnesium and the sulphate of magnesia; the rest being chlorides of sodium (common salt) and potassium (muriate of potash).*

Influenced by Prof. Marchand's opinion that, notwithstanding the abundant presence of the magnesian salts in the saline, the bed of rock-salt would be found free from such impurity, the Prussian Government began, in 1851, the first shaft, which, in 1856, reached the depth of 1,066 feet, the present working level. The ducal authorities of the contiguous lying Anhalt sunk, at a distance of two-thirds of a mile from the Prussian mine, a shaft which also developed a rich bed of alkaline salts, at, however, a less depth. The presence of the potash salts in the saline before referred to, was regarded, for a long time as a serious detriment to the economical purification of the sodium salts, and it was not until Prof. H. Rose, of Berlin, called the attention of the government to their *agricultural* value that any attention was bestowed on their preparation. Without attempting to enter into a full description of the mines, which were visited by the writer in 1869, and the relative position and chemical character of the salts, as also of their preparation for the market, it is, perhaps, worth while to call attention to a few points, which, in view of the growing importance of the subject, may be interesting to the readers of THE RURAL CAROLINIAN.

The twenty-odd large and well-arranged chemical works, lying in the neighborhood of Stassfurt and Anhalt, manipulate all the crude products of the mines, excepting the rock-salt, which is a government monopoly. The alkaline deposit varies in character according to depth. Beginning at the bottom lies a 685 feet thick bed of pure rock-salt; on this is found a stratum, 200 feet in thickness, of the same material impurified with easily soluble and deliquescent magnesia and potash salts. Still nearer the surface 180 feet of rock-salt impurified with sulphates, and most superficial a mixture of salts of sodium, potassium and magnesium. The whole deposit is estimated at 1,200 feet in thickness. The salts most important to the manufacturer and agriculturist, are the reddish, impure carnallite (the hydrated chloride of potassium and magnesium,) the sylvite, (the chloride of potassium,) the kainite, (the hydrated chloride of potassium and sulphate of magnesia,) and the polyhalite, (the hydrated sulphate of potash, lime and magnesia.) The mining of the alkaline salts is carried on on a large scale, 6,000,000 cubic feet having been excavated at the Prussian shaft alone in the period 1857 to 1868. In 1866 the two mines furnished 150,000 tons of potash salts, and since then the production has materially increased. In spite of this great drain, there is no reason to fear any present exhaustion of these beds, the only large and practicable sources of potash now known; since it has been estimated that the supply of carnallite is sufficient to afford at least 6,000,000 tons of chloride of potassium. The saline masses are taken from the shafts to the chemical works, where they are subjected to various processes for their purification and preparation for the market. These consist principally in grinding to powder, solution with the aid of heat either in pure water or in saline mother-waters, and the separation of the various salts by a careful study of their different degrees of solubility. The chief products of the manufactories at Stassfurt are the following, with their prices in gold:

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*The feet are Prussian feet, of which 1=1.03 English feet. For the statistics concerning the deposit I am largely indebted to Merl's article in Muspratt-Kerl's Chemistry.

	Per ct. pure Potash.	Per 2,000 lbs.* Zollverein lbs.
I. *Potash manure*, containing 18 to 22 per ct. sulphate of potash,	10–11	$ 6 90
II. Concentrated potash manure	25	20 70
III. Sulphate of potash and magnesia manure, prepared kaïnite, with 28 to 30 per cent. sulphate of potash	16–18	11 50
IV. Sulphate of potash, 78 to 80 per cent	43–44	58 65
V. Chloride of potassium, 80 to 85 per cent	50–53	41 40
VI. Sulphate of potash and magnesia, with 53 to 56 per ct. Sulphate of potash and 32 to 38 per ct. sulphate magnesia	28–30	41 40

These agricultural salts are supplied in a dry, powdered condition for direct application to the soil, or for mixing with compost or commercial manures.

At the time of the introduction of these salts into continental agriculture, the expectation of great results from their application ran away with the judgment of most agriculturists, as was previously the case with the earlier importation of Peruvian guano; but the injudicious use of these costly preparations, and the consequent pecuniary loss to many farmers, created a reaction, which, on the whole, has resulted happily, inasmuch as it has necessitated a careful study of the advantages which may accrue from an intelligent use of the potash salts. If we consider *what crops need potash*, i. e., by the culture of what plants is it abstracted from the plantation, we shall see that the more important crops really deprive our lands of vast quantities of this ingredient of plant food. We will note at the same opportunity the relative amount of phosphoric acid, on the one hand, withdrawn from the soil, and, on the other, refurnished to the land in the better known fertilizers. The analytical results are taken from the well known tables of Emil Wolff.

IN 1,000 PARTS OF THE FRESH OR AIR DRIED SUBSTANCE.

Substance.	Parts Ashes.	Parts Potash.	Parts Phosphoric Acid.	Ratio of Potash to Phosphoric Acid.	
Meadow Hay	66.6	17.1	4.1	1.	0.24
Potatoes	9.4	5.6	1.8	1.	0.32
Sugar Beet	8.0	4.0	1.1	1.	0.27
Turnips	7.5	3.0	1.0	1.	0.33
Cotton Seed Cake	61.5	21.8	29.5	1.	1.35
Tobacco	197.5	54.1	7.1	1.	0.13
Wheat	17.7	5.5	8.2	1.	1.55
Corn	12.3	3.3	5.5	1.	1.66
Stable manure	69.1	6.8	3.2	1.	0.47
Bone meal	608.		257.		
Superphosphate	680.		160.		
Peruvian Guano	338.	16	137.	1.	8.56
Fish Guano	325.	3	133.	1.	44.2

Keeping in memory that one fact which, at least, has been established by the recently numerous agricultural experiments, i. e. that every vigorous plant must be provided with all those elements of plant food which the chemical analysis of its ashes may demonstrate that it contains, (excepting, perhaps, a few more unimportant ones which appear susceptible of substitution,) the idea naturally occurs to us, are we not following a one-sided system of fertilization? Our table shows distinctly: 1. the very considerable quantity of potash and, the proportionately, far less amount of phosphoric acid abstracted by a number of the most important of our crops; 2. The great difference in the amounts of these ingredients which are restored to the field.

* 2,000 Zollverein lbs. = 1,814 English lbs.

In other words, while we carry off more potash and less phosphoric acid, we replace less potash and more phosphoric acid. Experiments have shown the effect of the yearly application of nitrogenous manures and the production of crops rich in inorganic matter. We know it to be the complete exhaustion of the soil. Do we then, incur a danger of impoverishing our lands, of rendering them worthless, by failing to replenish the potash salts, which are contained to such large amount in the farm produce? This question can best be answered by a revisal of the results of the experiments which have been instituted to prove the efficacy of these salts in increasing the harvest.

The soils which contain large stores of potash salts, are loams and the white clays which have resulted from the decomposition of rocks containing feldspar, mica and leucite. There is less potash in the clayey soils derived from the sedimentary rocks, and little or none in sandy, calcareous and humous soils. Sprengel calls attention to the following: that the vigorous growth of thistles, wormwood and burdock, affords proof of the presence of potash in the middle and lower strata of the soil; rushes, fumatory and bank-cresses, point to it in the topsoil; and a luxuriant growth of fern, lucerne, esparsette, broom, etc., may be indicate its presence in the subsoil; on the other hand the growth of plants as mosses, cotton-grass and sedges, containing little or no potash, prove the poverty of the soil in this respect.

We can only add a few of the experimental results on the agricultural use of potash in England and Germany. Dr. Vœlcker, in his report to the Royal Agricultural Society of England, January, 1869, observes: "In 1864 and 1865 my experiments were tried chiefly on *light sandy soils*, and having found potash efficacious when used in the shape of muriate or sulphate of potash, and still more so when applied to the land in conjunction with superphosphate of lime, I was anxious to ascertain whether the same beneficial effects which resulted from the use of potash and phosphate on light soils would also manifest themselves on clay land. In 1866 I consequently experimented upon heavy land with precisely the same manures which in previous years had given me a more or less favorable result on sandy soils; but, although several sets of experiments were tried in various parts of the country, no benefit whatever resulted from the application of salts of potash on heavy land either to roots or to clover seeds. * * * * * * It is evident, therefore, that either these soils contained naturally a sufficient amount of available potash to meet all the requirements of the different crops experimented upon, or that by good management, enough potash was restored to the land in the ordinary course of manuring and good farming to render the artificial supply of potash superfluous."

In a subsequent report, January, 1870, he takes occasion to praise the effect of potash salts when used in conjunction with other mineral manures, on mangolds, especially in light, sandy soils.

Sterneborg, Prussian Counsellor of Agriculture, in his pamphlet on experiments carried out on lands formerly swampy but since converted into dry moors, mentions that the potash salts produced excellent results in such soils, the good effect from their application extending into the second year. The report of the Central Prussian Commission on Agricultural Experiments* embraces an exhaustive and able account of numerous experiments which were performed at various German agricultural stations to test the efficiency of potash salts on the different crops and soils. Although there are many conflicting statements from the different points of observation, due in some measure to a most unfortunate season, still we are able to conclude that for all lands, except the light sandy soils, before referred to, the beneficial results

* Annalen der Landwirthschaft, January, 1870.

were either not observable or very slight. The potash salts, however, proved themselves remunerative for sandy soils and moors. The chloride of potassium had as beneficial an effect as the other pure potash salts; but none of the latter did as well as the potash *and* magnesia preparations.

In 1870 Mr. J. R. Dukes imported potash salts, sufficient to furnish several per cent. in a quantity of a complete manure, for agricultural experiments. He informs me that the experiments, which were conducted in the light, sandy soil of our seaboard, were eminently successful. During the past winter several consignments of these salts arrived in this city, and were examined by me. It is to be hoped that this material will be experimented upon with a view of ascertaining whether it is remunerative in its effects on our soils and crops.

In conclusion, I would state that the potash salts should not be applied in the drill with the seed, but are to be spread broadcast over the field as early as possible, and ploughed in deep. CHARLES U. SHEPARD, Jr.

Charleston, May, 1871.

The Utility and Preservation of Trees.

Nobis placeant ante omnia silvæ.—Virg.

"Woodman, spare that tree."—G. P. Morris.

The highest types of vegetable life are the trees of the forest. In all ages of the world they have claimed the attention, and commanded, to a greater or less extent, the admiration and fostering care of mankind. They beautify the landscape of nature outspread before us, and constitute the chief sources of attraction in every display of rural adornment. They charm us with their shining foliage and variegated and odoriferous flowers; comfort us with their refreshing shade during the sultry heats of summer; furnish us with shelter, fuel, food, delicious fruits, medicine, and, lastly, (without exhausting the enumeration,) they exert a marked climatic and sanitary influence upon their immediate vicinity. How, desolate and uninviting the approach to that dwelling, be it cottage or palace, around which no trees and shrubbery are seen to impart a fresh and living aspect to its surroundings! The *lack*, the *nakedness*, is apparent even to the careless observer. There is something peculiarly animating in a grove of beautiful trees. They are *standing, growing proofs* of creative wisdom in supplying our indispensable wants. They rear aloft their ambitious heads in forms ever varying, and bowing to the passing breeze; graceful, buoyant, pendent, uprising, over-arching, and *skyward bound!* No wonder, then, that Solomon, deeply impressed with the beauties of nature around him, "spake of trees, from the cedar tree that is in Lebanon, even unto the hyssop that springeth out of the wall." Vegetation is the only operation in nature which gives to the air free oxygen, indispensable to animal life. While all animals consume the oxygen of the air, and give back its carbonic acid which is injurious to their life, this carbonic acid, in the wise economy of nature, is the principal element in the food of vegetables; is decomposed by them, and its oxygen returned for the further promotion of healthy respiration. Hence, the perfect adaptation of the two great kingdoms of living beings, animal and vegetable, to each other—each removing from the atmos-

phere that which would be noxious to the one, but essentially necessary for the continued existence of the other. Late researches inform us that the sea teems with animal life, and without these myriads of minute vegetable forms, it is altogether probable its inhabitants could not long survive. They keep the water pure, and yield oxygen to the atmosphere. "The parlor *aquarium*," says Marsh, "has taught even those to whom it is but an amusing toy, that the balance of animal and vegetable life must be preserved, and that excess of either is fatal to the other, in the artificial tank as well as in natural water." It may be profitable to advert to a few facts, gathered from different sources, which illustrate and confirm the foregoing principles. Among the Romans, trees were planted in rows and masses to guard against the diffusion of *malaria*. The practice was enforced by law, and recorded on their tablets. This law, as reported by Cicero, (*Lucos in agris habinto,*) had reference more to its protective advantages than to purposes of adornment. Lancisi, an Italian author, calls attention to the fact that, on the removal of a thick forest, which protected the southern portion of the City of Rome and neighboring district from the baneful effects of the effluvia of the Pontine marshes, the intervening country became extremely unhealthy. A subsequent restoration of trees, and other vegetable growth by the Italian authorities, has been attended with most beneficial consequences. Carriere, in a work on the climate of Italy, says: "To cover the fields, the edges of marshes, and the whole extent of the soil with an abundant vegetation, is equal to placing on the surface of unhealthy regions a reparative apparatus of the greatest power."

Lieut. Maury believed that a few rows of sunflowers, planted between the Washington Observatory and the marshy banks of the Potomac, saved the inmates of that establishment from the intermittent fever to which they had been formerly liable. It would be well for our Southern farmers, owning large bodies of swamp lands with contiguous cultivated fields, to derive a suggestive, *healthy* lesson from this experiment, and make a thick, protective belt of the sunflower where needed—a vegetable too much neglected, and capable of being turned to profitable account, as it is known to yield a large quantity of bland oil, and furnish much nutritious food for stock. Dr. Lewis, in his "Medical History of Alabama," says: "It is the received opinion that living vegetation protects the human system from the deleterious effects of *malaria;* and, reasoning by analogy, it would appear that experiments made by scientific men have satisfactorily explained the mutual dependence of the animal and vegetable kingdoms on each other for support." Dr. Cartwright, in the "Western Medical Journal," ascribes to a species of *Jussiæa*, (*J. grandiflora,*) a plant found in great abundance in certain marshy regions of Louisiana, and presenting the usual malarial surfaces, the cause of their comparative exemption from fever. All the operations of nature tend to produce harmony in their results; and whenever man seriously interferes with that order it is at the expense of his health and well-being. It is a well established fact, that the climate of the older States has undergone a marked change in consequence of the destruction of the forests. The ex-

tremes of heat and cold are greater, and the uniform flow of springs has been greatly diminished. The character of the diseases have been also altered, and sometimes presented under new and unmanageable types. Boussingault, upwards of thirty years, taught that the clearing of forests diminished the current of water and the quantity of rain in a country. This important climatic influence of trees has been properly noticed by the Commissioner of Agriculture, (Report, 1868,) from which the following extract is taken: "In Upper Egypt the rains, which eighty years ago were abundant, have ceased since the Arabs cut down the trees along the valley of the Nile toward Lybia and Arabia. A contrary effect has been produced in Lower Egypt from the extensive planting of trees by the Pasha. In Alexandria and Cairo, where rain was formerly a rarity, it has, since that period, become more frequent." A similar good effect from the planting of trees, shrubbery, and other growing vegetation, it is said is now beginning to be manifested in refreshing showers along the line of the Suez Canal. Such being some of the principal uses of trees in the economy of nature, it is with feelings of regret that we witness the wholesale and thoughtless destruction of the primitive forest growth in many places of the older States, where a scarcity is already seriously felt on numerous farms. It is, however, gratifying to know that prominent agricultural societies, in various sections of the country, have been recently directing public attention to this matter. The "Gardener's Monthly" informs us, that "In Iowa the planting of trees is encouraged by law. Every acre of trees planted releases taxation for ten years on $100 valuation; and for each acre of fruit trees planted, tax is exempted on $50 valuation for five years; the same for shade trees and hedges along the highways. The result is an extensive cultivation of forest, fruit, and shade trees." This is wise legislation by one of the youngest States of the Union, and is particularly praiseworthy. Under the operation of this law, the last Census Report states that 15,000,000 of trees have been planted in that State. Nearly half a century ago Bremontier, an humble citizen of France, formed and executed the plan of covering the shore of Gascony, composed almost entirely of shifting sand hills, called *Dunes*, with the maritime Pine (*Pinus maritimus*). He sowed the seed plentifully over the ground where they were intended to grow, and afterwards thinned them out to proper distances. We imagine that, *Noah-like*, and *Lesseps-like*, and *Fulton-like*, he was *sneered at* by many for his foolish undertaking; but what has been the consequence? Now, magnificent forests of pine gracefully wave over that former desolate and almost *treeless* region. During the late terrific struggle no doubt it experienced, to some extent, "the ravages of war." In the older States we have many denuded and almost *treeless* districts, indicating the urgent propriety of covering them over with one or more useful trees, in accordance with their peculiar adaptation to soil and location.

The erection of parks in and near to many of our principal cities has an intimate relation, in its bearings, with this subject. They beautify their respective localities, afford places of resort for pleasure and recreation, intro-

duce our most conspicuous forest trees, and exert a sanitary and purifying influence upon their immediate surroundings. Many thousands of acres of the valuable lands of Great Britain are appropriated to parks; and it is believed these large assemblages of vegetable growth contributed materially, by their exhalation, to the continued health of the British Isles. Have our principal Southern cities, Richmond, Norfolk, Raleigh, Wilmington, Columbia, Charleston, Augusta, Atlanta, Savannah, and other cities of the Southwest taken timely action in this matter? We are apprehensive there has been some delinquency in this respect; and if so, it is "never too late to learn" to derive lessons of wisdom from the past, and endeavor, as far as we can, to come up to the requirements of this "progressive age."

Lincoln Co., N. C. C. L. HUNTER, M. D.

Department of Natural History.

Specimens of insects, securely packed, (according to instructions given in our October number,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. CHARLES R. DODGE, Department of Agriculture, Washington, D. C.

Larder Pests.

The housewife has insect enemies to contend with as well as the husbandman; and, too, like the grain insects, they work in the dark, often making their presence known where they are least expected. Some of them she has never seen, although aware of their presence, while others are old acquaintances. Who of our lady readers has not been annoyed at finding "live crawling things" in the meal tub or flour barrel, and how many know their origin, or, in fact, anything about them. There are persons who believe that such things come spontaneously. But such is not the case in a single instance. All these different organisms are the direct progeny of parents that they resemble in some stage of their existence. Our meal worms are produced from eggs that are deposited by a brownish black beetle known as *Tenebrio molitor* which infests flour mills, bake houses, granaries, etc., doing great damage by devouring farinaceous substances. These larvæ (Fig. 1) are about an inch in length, cylindrical in form, smooth, and of a light yellowish brown color. The body is divided into thirteen rings—calling the head the first, which is provided with two small feelers or antennæ. It changes its skin several times, and at length becomes a pupa, making no cocoon. The pupa state lasts but six weeks, and the perfect beetle, (Fig. 2,) when first formed, is light colored, but soon

Fig. 1. Color, light yellowish brown.

becomes blackish. It is stated by some authors to require two years to come to maturity. The insects, in all stages, are found in ship biscuit; having sharp and powerful jaws, nothing short of metal will keep them from penetrating whatsoever they will. *Tenebrio obscurus*, a native species—*T. molitor* having been imported—is, also, found in flour, meal, bran, etc., but is not so common.

Fig. 2.
Color blackish.

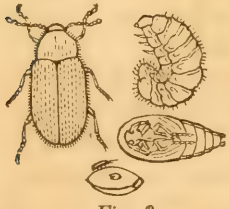

Fig. 3.
Color of insect brownish.

Anobium paniceum, (Fig. 3,) mentioned under the head of grain insects in the last number, is again introduced, with a magnified figure, as there is scarcely anything it does not injure when it gets a chance. It is known to take up its abode in stale bread, ship biscuit, oatmeal and other starchy products, and it even feeds upon such substances as cayenne pepper, ginger, etc. It remains in the pupa state four or five days.

Animal food suffers still more than our farinaceous. Hams, bacon, etc., unless kept well covered and protected, are attacked by a beetle, *Dermestes lardarious*., (Fig. 4,) which deposits long whitish eggs in the cavities of the meat. These hatch into little reddish brown larvæ, covered with bristly hairs; after changing their skins several times the larvæ bury themselves in the meat, and assume the pupa state, in which condition they remain three or four days or a week before coming forth perfect beetles. The mature insect is about quarter of an inch long, dull black in color, having a pale buff band across the base of the *elytra*, on which is a line of black spots; the thorax is dotted with white. It principally selects for food "that which contains much fat and connective tissue, seldom attacking the muscular portions where the other exits." The insects are found abundantly wherever smoked meat is stored.

Fig. 4.
Colors, dull black, buff and white.

But beetles are not the only mischief makers. Have you ever noticed a pretty, brownish moth, resting motionless upon the walls or ceiling of your kitchen, with the tip of its abdomen curved over its back? If you have not, a glance at Fig. 5 will serve for an introduction. It is the perfect insect of *Pyralis farinalis*, the caterpillars of which are found in old flour barrels and like places. The forewings are light brown, having the base and tip of each marked with a darker shade of chocolate, and both are crossed by two curved lines of white. They are easily seen at night, when resting upon the white wall or ceiling, and should be destroyed.

There is another insect, also producing a moth, which sometimes makes itself an unwelcome guest in our pantries, known as the grease moth, *Aglossa pinguinalis*. Its larvæ are glossy, blackish-brown, naked caterpillars, which feed upon butter, lard and fatty matters, constructing tubes which are placed against the substance it has chosen for food, covering them with

Fig. 5.
Colors, light brown, chocolate and white.

granules which are mostly its own excrement. According to Reaumer, it also feeds upon leather, and the binding of books. The forewings of the moth are grayish, with black stripes and spots.

The larva of a small moth *Tinea zeæ*, is said by Fitch to sometimes infest yeast cake, where Indian meal is used largely in their composition; and he therefore infers corn meal to be the favorite food of the insect, more particularly where the meal has been kept long enough to become stale.

The natural history of this insect is very similar to that of other species of *Tinea*, some of which were mentioned in a preceding article.

Other insects might be mentioned, such as the meat flies, cheese maggots, etc., but we have only intended to show a few of the commonest and most troublesome species. There is one insect, however, that deserves a mention, as it is such a nuisance in the kitchen, the pantry, and even the library; the common cockroach. Many remedies have been suggested for their destruction, some of which have proved very successful. Rathvon says: an excellent trap can be made with a deep bowl that is glazed or smooth on the inside—and with easy approaches on the outside—baited with old cheese. Red lead and Indian meal mixed with molasses has also been recommended; but we have found nothing so successful as a "rat and roach exterminator," that can be procured of any druggist, mixed with a little molasses, and daubed on slips of paper, here and there, about their haunts. Once or twice repeating the dose will generally clear them all out. Whatever preparation are used great care should be taken to have all food well covered up, or removed entirely out of the way.

In this connection it may be well to state that *ants* may be destroyed by moistening a sponge with water, and sprinkling a little sugar into the pores, the whole to be squeezed in *hot* water when it becomes filled with insects.

A NEW CURCULIO REMEDY.

The following remedy for the curculio, which has never been published, was used very successfully last summer in Northern Ohio. It was intended for our last number; but, if too late for trial this season, it will *keep* till next. It is known as "Lansdown's Curculio remedy," and is as follow: One peck of unslacked lime, one-half peck of strong *wood* ashes, one pound ground red pepper, mixed in a tub or barrel, at once, with six buckets of water. After allowing it to stand twenty-four hours it is ready for use. It is to be sprinkled or syringed over the trees about once a week, for three or four weeks after the blossoms appear.

NEW ZEALAND FLAX is said to grow wild in Nevada. It grows in large bunches matted together. The fibre is so strong that it is difficult to break the smallest thread. The Indians make use of it for lines and thread. It grows on the low land between the "Meadow wire grass" and the "Sage bush." We notice by California papers that experiments in the culture of this flax are to be made in California.

Answers to Correspondents.

BEETLES NAMED.—E. McI., Society Hill. 1. The beetles sent by you for identification, etc., were received in excellent condition, alive. The green one marked with black spots, and found on apple trees, is the *Diabrotica 12-punctata.* They are great pests, as they puncture and devour the leaves of a variety of plants, often being found in large numbers. Hand picking is the only remedy.

2. The reddish yellow species, also black spotted, (*Hippodamia maculata,*) belongs to a large family of very beneficial insects, the *Coccinellidæ*, commonly known as "lady birds." The different species are similar in shape, though they vary somewhat in color and marking. As their food is *entirely* plant-lice, and similar insects, on which they feed, both in the larvæ and perfect stages, they are the very best friends of the farmer, and should, therefore, be protected.

3. The principal insects which destroy the eggs of injurious species, (and even injurious insects themselves,) belong to a family in the order *Hymenoptera*, which includes the bees, wasps, etc., called *ichneumon flies.* They are small, oftentimes minute, glassy-winged insects, resembling tiny wasps. The females deposit their eggs within the eggs or bodies of other species, and the grubs, hatching, there remain until time for them to come forth perfect insects. We propose, at some future time, to give a series of articles on beneficial insects, as few farmers know their friends even when they see them.

MAY BEETLES.—"Rural." The smooth chestnut brown insects, sent by you for name and description, are the *Lachnosterna fusca*, of Lec., commonly called May beetles. The larvæ are large, fat, fleshy grubs, and when abundant in old pastures and fields, do great damage by feeding upon roots of grass, etc. They are often turned up by the ploughshare in the spring, and are greedily devoured by crows and other birds. The pupæ are formed under ground in oval cocoons of earth, and the beetles (Fig. 6) make their appearance at this time of the year, feeding upon the foliage of a variety of fruit and forest trees. At night, they are frequently attracted into our houses. The *antennæ*, which are situated on either side of the head, are club-shaped, or *lamellate*, (Fig. 7,) and readily distinguish the family, nearly all of which are vegetable feeders.

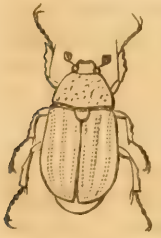

Fig. 6. Color, dark mahogany brown.

Fig. 7.

When the beetles are very abundant on fruit, or other trees, they may be shaken, or jarred off on to sheets, and then destroyed.

LADY-BIRD PEST. D. H. J., Charleston. 1. Just as I had supposed! The lady-bird sent as being so destructive to "running mangoes" (*Sechium edulis*) is the *Epilachna borealis*, and is the only injurious species in the family to which it belongs. It is also found on various other cucurbitaceous plants, such as squash, melon, cucumber, etc., and should be destroyed as soon as seen. It is easily distinguished from the beneficial species, as it measures nearly half an inch in length, and is of a clay yellow color, having six black spots on each wing-cover, the largest of which is situated nearest the tip. The thorax is marked with four minute spots or dots, and the under side of the body is also clay yellow. The eggs are deposited on the underside of the leaf, and the larvæ, which are covered with spines, change their skins several times before maturity.

2. The hairy, yellow, and brown caterpillars belong to a group of insects called *Arctians*, which produce the white millers that fly into our houses at night. The different species feed on a great variety of plants, and are, indeed, "general feeders." The species sent is most probably *Spilosoma virginica.* The best remedy is to kill the young worms while they are very small, and before they have scattered much over the plants.

We have heard of persons who believed that the *clothes-moth* was produced from these same white millers, but they are in error.

THE RURAL CAROLINIAN.

VOL. II.] CHARLESTON, S. C., JUNE, 1871. [No. IX.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

SUMMER HINTS.

We are convinced that the Southern States, excepting the comparatively narrow belt of malarious country near the coast, are quite as salubrious, to say the least, as the Northern and Western States. If our people are less healthy than those of the North, the cause must be looked for elsewhere than in climate. We believe, however, that there is little difference, and that with more correct dietetic habits, we should have greatly the advantage of the inhabitants of more Northern climates. But this is not the point to which we wish to direct attention. Each region has its peculiar diseases and dangers, and it is our business to enquire closely into those of the South, with a view to their prevention and avoidance; and hints on hygiene are not out of place, even in an Agricultural Magazine.

Nothing strikes the stranger, visiting the South for the first time, more forcibly than the sallow complexions of a large proportion of the population. If he be a physiologist, he infers a repleted condition of the liver, and a system overflowing with bile and particularly liable to bilious fevers and diseases of the bowels. So far, he is right; but he should also note the almost total absence of that unhealthy transparency of skin and the hectic flush, so common at the North, and indicating a far more dangerous condition, and pass the fact to the credit side of our sanitary account. The biliousness and its consequences are, however, what most concern us. Can they be avoided? or are they the inevitable results of living in a Southern climate? We believe that the condition of the system referred to results mainly from avoidable causes, and that a good complexion, unimpaired health, and the full activity of all the vital functions are, under favorable conditions, as easily attained and preserved here as anywhere else. We are not disposed to argue this point, however, preferring to devote our limited space to the introduction of a few hints for the season, which we know will be found useful in practice, whether our theory be sound or not.

1. In hot weather the processes of fermentation and putrefaction are greatly hastened, and anything not readily digestible or in any way inimical to the system, taken into the stomach, acts more rapidly and injuriously than in cool weather; so the character of our diet is now of the utmost importance. In the colder climates of the North, and during winter, a diet composed largely of animal food is allowable, if not best; but here, especially in summer, meat should be sparingly eaten, and such abominations as fried bacon and "long collards," soaked in grease, should be utterly avoided by all white people, and especially by the ladies, whose too sedentary habits are not favorable to the digestion of such food. We are sorry to be obliged to say anything against the established diet of the country, but we are thoroughly convinced that fried bacon and hot bread have far more to do with the sallow complexions and billious condition of our people than their warm climate. Our earnest advice is, eat but little meat during the summer, and let that be beef and mutton, especially the latter, if you can get it, and to enable all to do so, every farmer should raise sheep.

2. Bread and the garden vegetables of the season should be our principal diet in summer. For bread, as we have often had occasion to say, nothing is so wholesome as *unbolted wheat flour*—"Graham flour," as it is

generally called. A mixture of rye and wheat also makes an excellent bread. Corn bread is more suitable for winter, and should be sparingly eaten during hot weather.

3. Fruit should, if possible, make a part of every meal in summer; but it should be *perfectly ripe*, or else well cooked. Unripe fruits often do great harm, but there are no better preventives of disease than ripe fruits, eaten in proper quantities and at proper times. The contrary opinion, though extensively entertained, is a great error. Tomatoes, you may class with the vegetables or with the fruits, as you please, but eat them largely, by all means.

4. Avoid whiskey, but if you can get the pure "juice of the grape," we would not interdict it. In malarious regions, provide yourself with cisterns from which to get your drinking water, and avoid that of springs and shallow wells. If obliged to go into the field before breakfast, take a cup of coffee before going out.

5. Bathe the whole person frequently, to keep the pores of the skin open and promote the cutaneous excretions.

Other seasonable hints suggest themselves here, but lack of space compels us to defer them till some future occasion.

TO READERS AND CONTRIBUTORS.

The length of several contributed articles herewith presented, has compelled us to omit a large amount of editorial matter and correspondence intended for the present number, and prevented us from giving so great a variety as we could have desired. We trust our contributors will bear in mind that we have now a very large corps of writers to make room for, and an extensive range of subjects to discuss, and give us their facts and thoughts in the most condensed form possible. It should also be remembered that our large circulation makes it necessary for us to go to press early in the month preceding the date, so that all articles intended for any particular number should reach us at least a month in advance of the time at which they are expected to appear.

"The People's Practical Poultry Book," by Wm. M. Lewis, lately published by D. D. T. Moore, at the *Rural New Yorker* office, is one of the best works we have seen for the general reader—plain, practical and sound. It treats of the different breeds, and the breeding, rearing and the general management of poultry of all kinds, and contains just the information most needed by the people. [Price, $1 50.]

If any one is disposed to doubt the capacity of our soil and climate for the growing of Irish potatoes, we shall take pleasure in showing them some specimens of the Early Goodrich, grown on Wadmalaw Island, by Geo. W. S. Hart, Esq. We have never seen finer ones grown anywhere. Three of them, selected as a fair average, weighed two pounds. Will Mr. Hart give our readers his mode of cultivation?

The Rural Messenger, published at Petersburg, Va., by Ege, Bozel & Rogers, ($2) and ably edited by Thos. S. Pleasants the first number of which we noticed in our February issue, is improving both in manner and matter. We are glad to see this evidence of success.

Our good friends of the *Rural Southerner* do us the honor, in their May number, to copy two articles from THE RURAL CAROLINIAN, but unintentionally, no doubt, give no credit for either.

A Subordinate Grange of Patrons of Husbandry has been organized in Charleston, counting among its members some of the principal farmers and horticulturists of the vicinity. Thus the good work has been commenced. Our friends in Colleton County, we learn, are also moving in this matter.

"The Oat Crop—its Importance to the South," by Dr. E. M. Pendleton, appeared in THE RURAL CAROLINIAN for December, 1870. Will the *Plantation* please make a note of this fact?

FARM AND GARDEN NOTES.

Fodder Pulling.

Some years since, an intelligent planter in Virginia, made a series of careful experiments, with a view to ascertain the loss in weight of the corn by stripping off the blades;

also the effects of "topping." The following is the result in tabular form:

	lbs. pr. row.
Four rows, stripped and topped at same time	134
Four rows topped, blades left below the ear	139
Four rows, blades left on whole stalk	161
Six rows, blades pulled to the top	88
Six rows, all the blades left	125
One row stripped, tops cut ten days later.	90
One row, blades all left	128
One row, stripped, tops left ten days	128
One row, blades all left	142
One row, stripped, tops left ten days	114
One row, blades all left	122

The Bean Weevil Again.

We are told by a gentleman who has tried it for several years, that seed beans may be preserved from the weevil by the following method: "Dry the beans thoroughly; fill the bottle to the neck, then saturate cotton with spirits of turpentine and fill the neck. Stop tight. The weevil egg is destroyed." Another says that the simple exclusion of the air from them in a bottle, can or barrel is equally effective.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

REVIEW OF "WINE WITHOUT FERMENTATION."

Editor of The Rural Carolinian:

In an article published in the September number, page 783, of your valuable journal entitled, "Wine Without Fermentation," you state that the late Professor Wm. Hume was the discoverer of a new method of wine-making, *in which* (vinous) *fermentation is entirely dispensed with.* I quote the substance of the Professor's theories, as stated in your journal:

"Finding that the must or expressed juice of the American grape is abundantly supplied with sugar, flavor and aroma to make it palateble, and even delightful to the taste, Professor Hume applied himself to the discovery of some process by which this juice, or at least all that is valuable about it, may be preserved, and that troublesome and sometimes unmanageable fermentations which destroy its sweetness and flavor be entirely prevented. Wine-makers opposed it, as was to be expected, and declared that the beverage produced was not wine, but a grape cordial. They could not deny that it was pleasant to the taste and wholesome."

In order to arrive at a correct conclusion on the subject under consideration, it is essential to determine what wine is. From analysis by modern eminent chemists, we learn that *wine is the fermented juice of the grape*, and consists principally of water and alcohol, its other constituents or components being grape, sugar, gum, coloring and extractive matters, tartaric, tanic carbonic and malic acids, and tartrate of lime. These, in connection with œnanthic ether and a volatile oil, are the resultant combination of (grape) wine. The volatile oil has never been isolated, but is supposed to be the cause of the delicate flavor and odor of wine called the bouquet. It is generated during fermentation, consequently is never found in a mechanical wine without fermentation.

The vinous odor of wine is due to œnanthic ether, which has so powerful an odor of wine as to be almost intoxicating. It does not exist in the juice of the grape, but is produced during fermentation, and increases in quantity by keeping, as the odor of old wines is stronger than that of new wines. This ether is always (in fermented grape wines) present, and can be recognized by its smell, and is one of the general characteristics of all grape wine. The other ingredients of wine, above enumerated, are sometimes present and sometimes absent. Thus, sugar is present in sweet wines and absent in dry or acid wines. Tanic acid in rough wines as claret, hock, etc., and carbonic acid in those that effervesce. The different kinds of wine derive their various qualities from the mode of fermentation, the nature of the grape, the soil and the climate in which it may have grown.

The alcohol in pure wine is the result of the vinous fermentation; and is intimately blended with the other constituents of the fluid; but with nearly all foreign wines of commerce brandy is added. This state of union is different from that of the natural alcohol of the wine. The intoxicating quality in all wines is the alcohol which they contain; the alcohol naturally in wine is so blended with its other constituents as to be in a modified state, which renders it less intoxicating and injurious than the same quantity of alcohol which has been separated by distillation and diluted with water.

The deductions from the above specified conditions, requisite for the production of wine, prove conclusively that a mechanical admixture of commercial (corn) alcohol and crude grape juice is at best but an abortive imitation of wine, there is nothing in common between the two products except the crude materials contained, any more than

there would be between wool and the finest fabric that can be manufactured from that material, or between the crude iron ore and an elastic and polished steel blade, between whole wheat or the most savory pastry. All the crude and soluble impurities remain intact, and such a mechanical mixture, however pleasant to the palate, possesses no hygienic or health-restoring properties. The insoluble impurities would, in a measure, be removed by filteration and render the solution clear and transparent, and the twelve per cent. of alcohol added would destroy the germs of fungic, and act as an antispeptic on the albumenous glutinous compounds, thereby arresting putrefaction or fermentation.

I cannot conceive on what hypothesis professor Hume could claim the alleged discovery. The principle of arresting putrefaction and fermentation by the use of alcohol is as old as the art of distillation. Nearly all organic substances are preserved by its use; medical tinctures, vegetable extracts, and sacharine fluids, that would naturally ferment and spoil, are preserved by the addition of from six to twelve per cent. of alcohol.

The writer, several years ago, made the same experiment, not for the purpose of making wine, but to ascertain what per cent. of alcohol would arrest the vinous fermentation. The quantity was the same as stated by the professor, i. e. 12 per cent. From this we learn, that all wines containing over 12 or 12½ per cent of alcohol by weight are added by distilled liquors. The heavy sweet wines of southern Europe have from 5 to 12 per cent. alcohol in the form of brandy added after fermentation to prevent the after fermentation and organic disturbance. The resulting effect is the necessity of from five to ten years' storage to amalgamate the alcohol with the wine, and neutralize the fiery taste of the alcohol. How much more so with a crude mixture of grape juice and alcohol that has never undergone the process of vinous fermentation and possesses none of the characteristics of wine. There is no medicinal or health producing properties in such a compound except such as can be obtained by the use of diluted sugar and alcohol. What physician would prescribe a mixture of this character? There is actually none of the constituent physiological elements of wine present except the alcohol, derived from an entirely different product than that of the grape. Recently a new process has been introduced in wine making, both in Europe and the United States, known as the d'Heureux patent Air Treatment. By this method sweet or dry (acid) wines are produced at will. The wines by this process are fully matured and merchantable in less than two months from the grape. These wines are less acid than wines made under the ordinary process, never showing symptoms of after fermentation or other disturbances, and are distinguished for their superior flavor. By this process the vinous fermentation is under the full control of the vigneron, and any grade of sweetness can be secured, and at any ordinary atmospheric temperature. Wines made by the air treatment last August and September (1870) received the highest prize at the Georgia and South Carolina State Fairs. A. C. Cook.

Covington, Ga., April 4th, 1871.

Prof. Hume is not alive to defend his theory of Wine-making without Fermentation, but his reputation as a scientific and practical chemist, his thorough knowledge of wine-making by the ordinary process, and his well-known probity, candor and unselfish interest in everything calculated to promote human welfare, furnish a sufficient answer to the foregoing criticism. Mr. Cook's arguments are mainly based on *definitions*, and he need only carry the same line of reasoning a little further to exclude his air-treated grape juice from the list of wines. Shall we say that because he interferes with the natural process of fermentation, that he does not produce wine, but something else, that should be called by another name? By no means. Definitions describe, but do not create facts, and must be modified whenever they cease to correctly represent them.

As to the real chemical and sanitary questions involved, we shall leave them for those better qualified than ourselves to discuss.

NOTES ON THE MAY NUMBER.

Editor of the Rural Carolinian.

It is a rainy day. Under the old regime I would be fixing up things generally. Under the new, the 14th amendment can't recognize the obligation to do anything but "tend the crop." I am a gentleman—a gentleman of elegant leisure for the day—and amused myself in looking over the pages of your May number. "Theories of Fertilization." A very sensible and well-timed article—but we have not touched bottom on the fertilizing question yet, by a good deal. There is some mystery about soils that needs clearing up. A great deal of money has been wasted in experiments. Why do some men *always* succeed, while others just as practical and careful, pursuing the same course, fail? Is it not essential that rest and rotation should go hand in hand with concentrated fertilizers? It seems so to me on the principles of common sense. "Phosphatic sand of S. C." A very interesting article. It is grati-

fying to know that we have such resources—how to use them profitably is the question.

"A plea in behalf of South Carolina and the Planters." Give me your hand, brother planter. You are right; this incessant cant about our desolate fields, bad management, and all that, I am sick of. The Southern planter did only what the whole world has done and ever will do where land is cheap and population sparse, and any leading product remunerative. The world will never produce a better type of the true gentleman, the patriotic, public spirited, hospitable citizen than the old Southern planter.

It comes with a bad grace—these sneers—from gentlemen who are lending their money at 12 and 15 per cent., secured by liens and mortgages, and growing fat and sleek on the planter's labor.

"The cost of producing cotton." Mr. Coker has "done the State some service" by his practical essay upon this subject.

Planters are in the habit of neglecting details; of overlooking small matters. Once this was all very well, but now we cannot afford it. I am satisfied that very few men can afford to grow cotton under 20 cents, with free labor.

"Does Guano Pay?" Mr. Moore has been travelling the same road a good many sanguine experimenters have been. His communication is to the point, and plain as the nose on a man's face. I would be glad if every experimenter would be so candid. This fertilizer question needs sifting thoroughly to the bottom over and over again.

"Is the South a Stock Country?" No, nor never will be until this present generation dies out. Do away with worm fences? Why it is preposterous to think of such innovations! Make a fellow pen his cow who has no land of his own, pays no taxes, is independent of all creation, and must have a range?

"Clover and Rotation." We have a field which was well set for several years in clover, but owing to the increase of that pest plantain, we ploughed it up, and have planted it three years in cotton, yet this spring there is a fine stand of clover on it. The seed will be coming up for years as the soil is cultivated. * * *

THE CACTUS HEDGE PLANT AGAIN.

Editor of The Rural Carolinian:

Although not authorized to speak for me, your conclusions were correct as to the reasons why I had not replied to all parties, perhaps "D" among them, in reference to the cactus. I am not aware of having made an effort to "press the plant." I simply introduced and called attention to what I then thought, and am still more convinced of now, were qualities of merit in it as a *hedge plant* over any plant of which, by practical test, I had known or now know.

When the article "Experience in Hedging" was prepared, most of the facts necessary for a proper understanding of the plant, its history, habits, etc., were given. In addition to that, I had a section of the hedge photographed, so as to convey a more distinct impression of the plant than pages of description would impart.

Scores of letters came to me in reference to it, and for a time were all replied to. Many of them, however, requested answers without enclosing stamp. These I concluded not to answer, deeming it quite sufficient, *pro bono publico*, to give my time, ink and paper without additional tax. Every letter containing a stamp has been answered, and will be in the future. I have sent by mail, express and freight, hundreds of lobes to a majority of the Southern, Western, and Northwestern States, and from some have heard of their safe and sound arrival. To all parties I make the offer of prompt reply when a stamp is sent to pay the postage.

In addition, Mr. Editor, I invite you or your readers to call and see the hedge for themselves. My residence is near, half mile from Manack Depot, on Western Railroad, twelve miles west of Montgomery, where it will afford me pleasure to meet you or them at any time. This invitation is as freely as it is unreservedly given.

P. Tally Graves.

Manack, Ala., April 28th, 1871.

INQUIRIES AND ANSWERS.

J. A. W., Carthage, Miss, (among others, both North and South,) having expressed great astonishment in view of the apparently fabulous quantity of corn (200 bushels and twelve quarts,) said to have been grown by Dr. J. W. Parker, of Columbia, S. C., on an acre of ground, and inquiring whether *shelled* corn could possibly be meant, we desired to set the question definitely at rest, (though having no doubt ourselves on the subject,) and addressed a note of inquiry to Dr. Parker. The following is his reply:

Columbia, May 8, 1871.

D. H. Jacques, Esq.:

My Dear Sir—I do not think that I can better reply to your late letter, or that you could better answer the numerous enquiries concerning the "Premium Corn Crop," grown some years ago on my farm, than by sending copies of my report on "Corn Culture." published among the Proceedings of the Annual Convention of the South Carolina Agricultural and Mechanical Society, November, 1869. In that paper, full information was

given on every point of interest connected with the cultivation of this extraordinary yield. I have but a word to add about the measurement.

The acre was within two hundred yards of my barn. The committee assembled early in the morning and the corn was broken in, hauled up and measured in the presence of one or more of the committee, who were all well known citizens. The measurement was by barrels, one or more (three, I believe, was the exact number,) were taken at hazard, the contents shelled and measured. The average was then multiplied by the number of barrels, and the result obtained.

I wish much that I could find the report of the committee published by the Society of that date; it explained all this I believe, and stated that the committee would be willing to buy or sell by the same measurement. It was not uninteresting at the time to know, that a friend who had walked through the corn a few days before, by counting the ears on several rows had estimated the yield at 213 bushels.

I attribute the success more to timely irrigation, than to any other cause.

Very truly and respectfully yours,
J. W. PARKER.

——J. R. may easily multiply his quince trees by layering. A good way, where they have put out shoots from the base, is to keep up the earth around them as shown in the cut. The shoots will emit roots during the season, and next fall they may be slipped off and planted. The fig, the hibiscus and many other trees and shrubs are very readily propagated in the same way.

——If W. (Marion, Ala.,) will send us a perfect specimen, stem, leaves, and a piece of the root of the grass he describes later in the season, when in bloom or with fresh seeds, we may be able to tell what it is. It may be what is called "Cuba Grass" in some localities, and "Merceris Grass" in others, (*Sorghum halapense,*) but it is impossible to decide from the fragments sent.

——C. wishes some experienced clover-grower to tell him whether red clover will bear cutting two years before turning under; also, what kind of grass will be best to sow with clover next fall. Soil sandy, with a clay subsoil.

——The Wooly Aphis, falsely called American Blight, may be destroyed by whale oil soap and by lime wash. There is another species of aphis which attacks the roots. These are, perhaps, what "R." found on digging around the trees. Scrape away the earth and treat with strong soap-suds. For fuller information address our entomologist, Mr. Charles R. Dodge, Washington, D. C.

——"Florida" wishes some one to give the best mode of packing grapes for the New York market, and asks: "How would they go packed in sawdust, in tight boxes?" Will some one who has had experience please answer.

NATURAL HISTORY ANSWERS.

The following answers, by Mr. Dodge, were crowded out of their proper department:

BLADDER-PLUMS.—F. L. R., Eufaula, Ala. Though the specimens sent by you were much dried before they reached us, yet we think they will come under the above heading. The injury is most probably due to a parasitic fungus, and *not* to insects. Mr. Riley mentions, in the *American Entomologist*, having twice received these "Bladder-plums" from correspondents in Missouri, and their specimens were also found on the Chickasaw plum.

NOTE.—In the article on Grain Pests, in our last number, Figures 2 and 4 were omitted, not having been received in time for insertion, and they are consequently given in this number. Figure 2, *Anobium paniccum*, appears in the article on Larder Pests (Fig. 3 present issue,) and Fig. 4, *Sylvanus quadricoblis* is here represented.

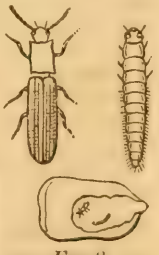

Fig. 8.
Color of Beetle, reddish-brown.

Page 471, May number RURAL CAROLINIAN, first column, line 4, for beetled read beetles; line 11, for *Sitephilus* read *Sitophilus;* second column, line 16, for SIEBALD read SIEBOLD.

PUBLISHERS' DEPARTMENT.

RATES OF ADVERTISING.

	1 Mo.	2 Mos.	3 Mos.	6 Mos	1 Year.	SPECIAL.
1 page.....	$25	$45	$60	$100	$180	Outside back cover
¾ page.....	20	37	50	80	140	double rates. Inside
1 column	15	28	40	60	100	back cover, 50 per
¾ column	12	22	30	50	90	cent. added to rates.
½ column	10	18	25	40	75	No advertisements
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⅛ column	3	6	8	12	20	
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We never, under any circumstances, give paid-for "notices" in our editorial columns.

Address all business communications to the Publishers, all contributions to the Editor. Where both are embraced, address the Publisher.

Subscriptions payable invariably *in advance.*

We offer, as special inducements to new subscribers, the following *club rates:*

6 copies sent for $10.
10 " " " 16.
20 " " " 30.

Subscriptions may begin at any time.

Moneys must be sent by Draft, Postoffice Order, Registered Letter, or Express, at our risk, but at the sender's expense.

RENEWAL RECEIPTS.

We will send the receipts for all renewals of subscriptions in the *number* of the magazine following the date of the reception of the remittance by us. This is allowed by the Postoffice Department, and will save us considerable time and money. It is the usual custom with magazines

NOT CLUBBING WITH CHARLESTON WEEKLY NEWS.

Some time since the proprietors of the Charleston *Weekly News* declined clubbing any further with THE RURAL CAROLINIAN. We are thus unable to renew old or take new subscribers under the previously existing arrangement. We are still clubbing with many first-class leading Dailies and Weeklies through the South.

BACK NUMBERS FOR DECEMBER, 1870, JANUARY AND FEBRUARY, 1871, WANTED.

Our subscription list ran up so rapidly in these months as to completely exhaust our edition. As we have still frequent calls for these numbers, we would like to secure several hundred of them.

Cannot some of our subscribers, who have read and do not wish to preserve them, help us out? To all who will send us copies of these numbers, (December, 1870, January and February, 1871, per mail, *prepaid*, we will extend their subscription one month for each copy sent. We thus give a *new* number for an old one.

Parties must mark their names and postoffice legibly on the covers and prepay the postage.

Receipt will be acknowledged in following number of the Magazine.

This offer will cover all numbers received by us previous to July 1st, 1871. But none received after that time, nor any other numbers of the Magazine.

WALKER, EVANS & COGSWELL.

BOUND COPIES OF VOLUME I.

It is a handsome volume of 800 pages, illustrated with more than 250 engravings on wood, stone and steel, among which are first-rate likenesses of David Dickson, the great Farmer; De Lesseps, the great Engineer; Liebig, the great Agricultural Chemist; W. Gilmore Simms, the great Southern Novelist, and others. Price only $2 50 We cannot afford to prepay freight. It cost to send it per mail forty cents. On the line of the South Carolina, Northeastern, and Savannah and Charleston Railroads, it costs per express, twenty-five cents. Include *amount* of freight in your remittance Address

WALKER, EVANS & COGSWELL,
Charleston, S. C.

FARM AND GARDEN CALENDAR FOR JUNE.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance North or South of this place must make the necessary allowances for difference in the seasons—about five days for each degree of latitude.

AGRICULTURAL OPERATIONS.

Keep the ploughs running briskly in the cotton field. On dry uplands, the level system of cultivation is far better than the plan of high sharp ridges so generally adopted. We believe this is not only sound in theory, but has been demonstrated by experience. On flat lands, especially if the season be wet and the land not well drained, it is necessary to throw up ridges to prevent water from settling about the roots. In thinning out to a stand, don't leave too many plants for the strength of your soil.

—— In the corn field keep the surface of the soil well pulverized and free from weeds, but let the cultivation be shallow and the ground be kept level, except where, as on wet low lands, ridging or hilling is absolutely necessary. Let the last working be particularly thorough, so as to leave the field clean.

—— Sweet Potatoes must not be neglected. Continue to plant your slips or draws. Take advantage of a rainy day for planting if you can, but plant whether it rain or not. We have planted in the midst of the severest drouth with the loss of very few plants. "Grout" the plants by plunging the roots into a batter composed of equal parts of fresh cow-dung, wood ashes and vegetable mould, mixed with water to the proper consistency to adhere to them. This will generally insure a perfect "stand," and hasten the growth of the vines.

—— Plant peas, not only among your corn but as a separate crop. You cannot well have too large a quantity of this valuable Stock feed. A bushel of seed will plant four acres if properly distributed in the drills, so as to require no chopping out.

GARDEN WORK.

In regard to summer gardening generally, see our article on the subject in May number, (p. 453.) June is generally a hot, dry month, and extra care must be exercised in whatever planting is done. Re-sowing, (where seeds or plants have failed,) hoeing and mulching are the principal operations of the month.

——Cabbages, even if a sowing was made last month for the fall crop, may be sown again this month, and may give better plants; but the ground must be shaded and the bed frequently watered till the plants have come up and made considerable growth. Sow Kohl Rabi in the same way.

——Cauliflowers and Broccoli should have been sown last month, but if neglected, try them now, shading and watering.

——Beets and Carrots may still be tried. If you can get a stand, they will come in well in the fall.

——Continue to plant Snap Beans once in ten days, if you desire a succession. The tender pods make good pickles. Lima and Sieva Beans may still be planted.

——Green Corn is desired during the whole season. Flint Corn is better to plant now than Sugar Corn.

——Okra may be planted for a late crop.

——Tomatoes should be tied up to stakes or trellisses, and the ground around them well mulched. Sow more seed for a late crop.

——Onions will be fit to pull from the middle to the last of the month. Take them up in a dry day, and spread them on a floor in a dry, airy place.

——Carefully work your strawberry beds to kill all weeds, and then mulch the ground. If you desire new plants, leave a space between the rows, very lightly mulched, for the runners to take root. Rice chaff, where the beds are not too much exposed to the wind, which sometimes blows it off, is an excellent mulch.

——Give your bulbs in the flower garden a heavy mulching, and let them remain in the ground till September, when they may be taken up, divided and replanted. Roses may be budded and layered. Dahlias which have ceased to bloom, may be cut down to the ground. If well watered, they will often throw up new shoots and bloom again.

Farm Scene.

THE

RURAL CAROLINIAN.

Vol. II.] JULY, 1871. [No. X.

How Dr. Parker Made His Premium Corn Crop.

Many of our readers have read in the "Proceedings of the Annual Convention of the South Carolina Agricultural and Mechanical Society for 1869," the report of the Committee on Corn Culture, of which Dr. J. W. Parker, of Columbia, was Chairman; but for the benefit of the thousands who have not seen it, as well as to have it here, where it can be referred to at any time, we now reprint it entire. In connection with Dr. Parker's note in our June number, it furnishes a complete history of the wonderful and much debated premium corn crop—probably the largest on record:

REPORT ON CORN CULTURE.

In performing the duty assigned me by the Agricultural and Mechanical Association, I propose, briefly, to give my own experience with the result of two or three experiments. As early as the year 1827, I became convinced that, in the event of drouth in summer, the ordinary method and routine of planting corn, in my neighborhood, was ruinous in its results, entailing on the planter the necessity of getting his supply elsewhere than from his own field. Acting from the suggestion derived from books on agriculture, I took for my first experiment a level, much-exhausted red-clay field, which produced not five bushels of corn per acre the preceding year.

About the first of December, I started the work of ploughing and subsoiling with bull-tongue ploughs and an old-fashioned Coulter, running two of the former to one of the latter, thus subsoiling every alternate furrow.

Early in February the field was laid off four feet each way with a seven inch shovel, followed by the subsoil plough. In each check a small shovelful of a compost of cotton seed, stable manure and the scrapings of the lots, was put and covered with a tongue plough. In March the field was planted in corn, the seed having been soaked in a solution of saltpetre, and was covered with hoes to the depth of about two inches. As soon as the plant attained the height of three or four inches it was thoroughly ploughed with tongue ploughs and followed by the hoe hands. It received two other ploughings with short shovels, and was laid by before the tassel appeared. The cultivation was level, rather drawing the earth from, than to the stalk, at the early stage of its growth.

The contrast between this and other fields around, during a hot and dry season, was striking. In this field, the vigorous growth and dark green blades gave but little indication of drouth, while in many fields around, the plant was literally being scorched to dryness.

The product was put down at twenty-five bushels per acre, being a gain of at least twenty bushels per acre over the preceding crop.

From the foregoing experiment we learn the beneficial effect of opening the soil for the reception and retention of moisture during the winter, the better pulverization by freezing, and adaptation of the soil for the ramification of the lateral roots of the corn.

It is remarkable that this method of preparing the soil, so successfully practiced among the ancients, should have been lost sight of in our country until within the last forty or fifty years, and what is more strange, but few farmers of our day know from their own experience anything of the benefit derived from deep ploughing in winter or fall.

In the foregoing experiment the error committed was in putting the manure in the hill, instead of ploughing it in the land broadcast. When manure is put in the hill the plant is vigorously pushed forward, and attains a great height before the shoot appears, and then commonly within three or four blades of the top, consequently distant from its source of nourishment below, and with but little protection from above. Take carefully that stalk from the ground and immerse its roots in clear water and remove all dirt. You will observe the roots confined to a small circumference, all seeming to grasp the food just at their exit from the stem, and comparatively but few lateral roots. When the manure has been properly ploughed in the land broadcast, the plant at first does not make such rapid headway, but from a wise provision of nature, the lateral roots are being sent out with their thousand mouths in search of food and moisture. They find all that has been bestowed by nature or by the hand of man, and the corn begins to shoot about the time the roots are in condition to bestow their treasures for its support. Just at this important crisis in the growth of the crop, it has been urged by old planters that the ground should have its last good ploughing. I have seen more than one field of luxuriant corn thus ruined. Common sense should admonish the ploughman to stay his hand, and leave undisturbed the delicate little veins or roots in the discharge of their important functions.

To gratify my farmer, as well as to convince him of his error, he was allowed to give what he termed a finish with the plough and hoe to a dozen rows—the result was a decided falling off in yield. The foregoing experiment shows that with the proper preparation of the soil, four feet by four gives sufficient distance on an upland, that the preparation of the land and first ploughing to the crop should be deep, and all other cultivation shallow and level.

My next experiment was of more recent date, and on land very different in character from the first, being nothing more nor less than a quagmire, near by the City of Columbia. It was grown over with rushes, willows and sour grasses, abounding with snakes and malaria, through which a serpentine branch made its sluggish way.

My first work was to secure thorough drainage by means of a canal and underdrains, then to clearing and levelling, and third to lime and break up with a two-horse plough, all of which was the work of the summer. In November a heavy coating of cow-house manure was applied and turned under with a two-horse plough. In January the same process was repeated, and again in March, and the subsoil plough used. In April, it was necessary to plough under a luxurious growth of weeds, lime being first applied as at first. In

May the hands were again on the ground with manure carts, two-horse ploughs and hoes; after ploughing another coat of manure in, the land was harrowed perfectly level, and laid off thirty-six inches apart; throughout each furrow Peruvian Guano, salt and plaster were sprinkled at the rate of 200 lbs. per acre of each. The seed corn, after being soaked in a solution of nitre, was rolled in plaster and dropped ten inches apart in rows, covered with rakes and the land rolled. Five days after planting, this corn was up and growing. As soon as it was large enough to bear ploughing it was run around with a long, narrow plough, followed by the hoe. There was nothing remarkable in the culture of this lot; it was kept clean by shallow and level culture until it began to shoot and tassel; *irrigation* was then resorted to by conveying from a reservoir a gentle flow of water through every alternate row. Thus the land was kept moist and the plant in a growing state.

The Agricultural Society awarded the premium for the largest yield to this lot, there being 147 bushels per acre produced on two acres.

The following year the same experiment was repeated, except that the rows were thirty instead of thirty-six inches apart.

Inasmuch as there were doubts entertained as to the correctness of the first crop, we were the more careful in having a larger committee to measure and report on this. Their award was the first premium as before, the yield being 200 bushels and 12 quarts of good corn on a single acre. The land was surveyed by the City Surveyor.

From the foregoing remarks and experiments the following conclusions may be drawn:

That success in corn growing depends much upon the thorough preparation of the soil during the fall and winter, which consists in—

1st. Deep breaking up.

2d. Underdrainage on moist flat land.

3d. The judicious manuring.

4th. That the first work should be deep; subsequent work shallow and level.

5th. The roots of the corn should not be disturbed after it bunches to tassel.

Under the old method of culture, the question has arisen whether or not corn can be made a remunerative crop. I should say on our old plantations it cannot. On the other hand, by improved culture, the effects of drouth or scalding from too much rain can be overcome, and instead of harvesting fifty per cent. less than an average crop, as is the case the present year, there would, doubtless, be an increase of fifty per cent. over the average of past years, on the same area of ground. The question would then be responded to affirmatively, and demonstrated by evidences everywhere of increased prosperity and domestic comforts. Fat stock of all kinds would give evidence of full barns, and the old adage would be verified: "It takes corn to make cattle and cattle to make corn."

J. W. PARKER.

Mr. H. Rivett-Carnac, cotton commissioner for Bombay and Central India, gives some curious information as to the effect of cotton speculations on the Hindoos. At first, the large profits quite turned their heads. They had ploughshares cast in silver, and cased their cart-wheels in tires of the same metal. Fancy prices were given for bullocks of a favorite color, or with some peculiarity of shape or tail. Enormous sums were squandered on marriage ceremonies, and the Bramins contrived to pocket enormous bounties.

Growing Onions in the South.

Onion growing, near cities or railroads, may be made a very sure and profitable business by those having a good, strong, kind working soil, with plenty of manure at hand. If the proper care be taken in selecting and preparing the ground, and in cultivating the crop, there will generally be a good yield; and, if convenient to market, there will always be a ready sale for the product. This profit, too, may be increased by raising, as we do, one's own sets. It requires from eight to ten bushels of sets to plant an acre. These sets are worth here two dollars per bushel, thus making it cost from eighty to a hundred dollars to plant one acre of land. This expenditure may be, for the greater part, saved by sowing onion seed in the fall, and raising your own sets. Four pounds of seed will plant an acre, costing $20. The following remark will show our plan of growing this crop:

New land is not so good for an onion crop as older, clean, nearly level land, which has been previously manured for other crops. We use the same land every year for onions, as this is one of the crops which do not require rotation; and we find, that after having cultivated this crop on the same land for two or three years, we have but little trouble with weeds, and, consequently can work over the crops in a short time, and do not have to work it over so often. Having selected the ground, about the 15th of September, manure it very heavily. Bear in mind, that to make large crops of fine onions, the land must be *very rich*, light, deep, and well pulverized. Spread the manure evenly over the surface. After you have put about enough on, at least what you suppose to be sufficient, put on as much more, and you will have it about right. Turn under, five or six inches deep, with a turning plough, and follow in the same furrow with a two-horse subsoil plough, as deep as the team can readily pull it. There's no danger of getting too deep in red clay land, provided the soil is in good working condition. After it has been ploughed thoroughly, harrow until the soil is well pulverized and the surface level; then pass a roller over to crush the remaining clods, which will leave but little work for the rake.

Mark off by stretching a line across the land, and marking with an instrument made to mark off five rows at a time, ten inches wide and one inch deep. Sow the seed in the rows with a seed drill or with the hand, rather thick, for some of the young plants may be killed by winter weather. Cover lightly with a rake or hand roller; the latter is preferred, as the seed come up better when the soil is pressed on them with a light roller. Work the plants over after two or three sharp frosts, to destroy the weeds which the frosts fail to kill, but do not thin them to a stand until spring, so that you may have enough plants to take the places of the few killed by the winter. In the spring, so soon as the land is in good working order, we apply a top-dressing of Peruvian guano, fine bone dust and salt. Work it lightly by hoeing. At the same time, thin out the sets so as to leave them standing three inches apart in the row, and fill missing places with the sets pulled out. After this they will require three or four more careful workings. And here we suggest, in regard to working this, and, in fact, all other crops, that the proper time to work them is just as soon and as often as the grass and weeds make their appearance, and not, as most people seem to think, when the patch has become beautifully green with grass and weeds. One man can work over more garden ground in one day, when the weeds are just starting from the ground, than six or eight men, after the weeds are six inches high.

The onion crop may be harvested in time to get another crop of late cabbage, turnips, or late potatoes, by those who wish two crops on the same land.

From three to six hundred bushels of onions may be grown to the acre—much, of course, depending on the season, ground, manure, and preparation and cultivation of the soil. They bring in this market from one dollar to one dollar and a half per bushel. We do not know how many could be sold here; but we do know that there are not half enough raised here to satisfy the demand. Nearly all the onions used in winter in this State are brought from the North or East. This should not be so. Let us grow at home at least what vegetables and fruits we use. The farmer who attends well to his garden and orchards, will have better living, better health, more real enjoyment of life, and more money than he who neglects garden and orchard to "*plant all cotton.*"—*Rural Southerner.*

Effects of Deep Ploughing.

A correspondent, who has experimented in deep ploughing, thinks it don't pay—in fact, that it is wrong in principle and ruinous in practice. He took a fair piece of ground—a sandy soil with a good clay subsoil—and turned it over to the depth of twelve inches, throwing up considerable clay. The result was not more than half the crop which the land would have produced if ploughed in the usual (shallow) manner.

We see no reason to doubt his statement; but we protest against The Rural Carolinian being held in any way responsible for the result. While we fully believe in a deep breaking up of the soil as a general principle and a general rule, and have frequently said so, we have also repeatedly warned our readers against *turning under their shallow soils too deeply*, or turning up too much of the subsoil at one time. He should have *gradually* deepened his soil, breaking up below with a subsoiler.

But, while our correspondent has fallen into an error, he is too hasty in his inference that the land is ruined. Unless there be something actually deleterious in the subsoil, we venture to predict that piece of ground in question, if peas or some other green crop be grown on it and turned under the present season, will next year produce a fair crop, and will continue to improve till it will be far more productive than the adjoining land treated in the ordinary way. The action of the atmosphere, the sun, the dews, and the rains, assisted by the roots of plants, will finally make of the crude materials turned up a fertile soil. A case in point falls under our observation as we write. A correspondent of the *Prairie Farmer* turned up a piece of land, with a side-hill plough, to the depth of fifteen inches. He got scarcely any crop. He seeded it to grass and pastured it for several years, when it was turned over again as deeply as before. It yielded better and continued to improve for years. He adds:

This was twenty years ago, and upward. The land still shows the benefit. It has, since it became established, acted like a different soil. The deep

ploughing—and that repeated—drained it and mellowed it, so that it withstood the drought and the wet—the drought especially, which is severe on elevated drift soil. But it had clay enough, and was mellow. On the yellow knolls there was the old condition; the clay was missing, and so were the grain and the grass; it was too dry.

At this late day the effect is still as visible as ever. Here the grass seems earliest in the spring, greenest in a drought, and of course flourishing in a moist season. Plaster has a most decided effect. The lot generally has the appearance of being manured, and yet it has never had a load of any manure, plaster alone excepted.

But the best way to deepen a soil is to do it gradually. In this, as in everything else, good judgment is essential. We can only supply facts and principles. Our readers must make use of *brains* as well as muscles in applying them to the preparation of the soil and the making of crops, adapting the teachings of science and experience to each particular case. Never blindly follow any leader while you have eyes of your own and know how to use them.

A Carolinian's Experience in Florida.

In the winter of 1865, I moved, with my family, from Carolina to Marion County, Florida, and rented and cultivated about one hundred acres of rich Hammock land in that county. I made a splendid crop the first year, which I sold at a high price; but, at the end of the second year, on account of chills and fever, the ravages of the caterpillar and the depredations of the freedmen, I found myself poorer than when I commenced.

Concluding that matters there were not likely to improve, particularly as the negroes every year seemed to be growing more and more demoralized, I concluded to move further South, into the wilds and out of their reach, where, if I made but little, I might at least enjoy the fruit of my labors, and where the climate was healthy and also better adapted to the cultivation of tropical fruits.

ON THE GULF COAST.

So I moved to Mullet Creek, near the Gulf of Mexico, and took a homestead on Government land. The soil was very poor, light and sandy, producing nothing but wire grass, saw palmetto and stunted pines. All the neighbors said it was "too poor even to sprout cow peas." But I had observed that there was on this place a small prairie of about seven acres, covered with a dense growth of saw grass, which could very easily be ditched and drained; also a large Indian mound, which would afford an abundant supply of excellent manure. The situation was high and dry, with a beautiful and extensive view of the Gulf.

I ditched and drained the prairie perfectly, planted four acres in corn and potatoes, and the balance in rice, and better crops than this small patch made, I think, never grew in Florida. From this small piece of ground, my garden, a few cows and an unlimited supply of shell and other fish from the Gulf, we principally drew our support for the first year.

THE INDIAN MOUND.

The mound referred to was some eighteen or twenty feet high, with a base of some three hundred feet, and was principally composed of decomposed and decomposing sea shells, fish bones, and the bones of the Manatee and other animals. This was no doubt the work of Indians ages ago, and, according to my theory, was made in the following manner: On this spot a large family or small tribe of Indians had their homes. They fished in the Gulf, hunted in the forest, and here they brought, cooked and eat their food. The shells, bones and other refuse parts they scattered around their huts, forming, in the course of generations, this great mound; and perhaps the higher the mound grew the better they were pleased, as it gave them a fine lookout from which to watch the labor of their friends, or to observe the approach of their enemies. There are many such mounds along the Gulf Coast in Florida, and the reason, I am satisfied, they were made, as stated, is that all through this mound I find Indian pottery, cooking utensils, arrow-heads and Indian ornaments.

HOW THE PAST SERVES THE PRESENT.

I felt sorry to destroy such a memento of ages past, and tribes lost and forgotten. But what they had once refused to eat, time had converted into the proper food for plants; and here in this poor, sandy soil, which I had chosen for my home, neither plants nor trees would grow and flourish unless I supplied them with suitable food, and here at hand was an inexhaustible supply, so I dismissed my scruples, and have been, and am still scattering the mementoes of a past age to feed the present.

OUR FARM AND GARDEN.

I have built a comfortable double log cabin and other outbuildings, and have cleaned and enclosed over fifty acres of land. Have planted out over six hundred orange trees, a small patch of bananas, peach and plum trees; have lots of figs and some pineapples.

I plant corn enough for my family use; have a patch of the finest variety of sea island cotton, for which the climate and soil seem wonderfully adapted, the staple every year increasing in fineness and quality, and bringing the highest price in market.

We have a very large garden, or rather vegetable patch, of some ten acres, in which we raise the very finest heads of cabbage, and almost every other variety of garden vegetables; and, to crown all, have a most excellent market at our own door for everything we can raise to eat. For almost every week, some coasting, wrecking, or sponging vessel calls at our place, and pays the very highest kind of prices for everything we can spare in the shape of vegetable food.

GOOD HEALTH AND HARD WORK.

We have all enjoyed excellent health since we have been here. We have worked very hard, for without the purchase of any commercial fertilizer, but simply by judicious management and plenty of hard labor, we have made this naturally sterile and barren sand as productive and profitable as any

spot of the same size I have seen in Florida. And when all our fruit trees get into bearing, and we get a few more good and true men to settle around us, so as to have a postoffice, school and church, I would not exchange it for any place or home I have ever seen.

To convert a naturally poor and barren soil into a fertile one, is usually a great undertaking. But I knew I had been judicious and fortunate in my selections, *for I had a healthy spot*, and a beautiful prospect of the sea. And here was the mound, a vast manure pile, which had been collecting for ages, and was then just ready to be spread over the fields.

A GOPHER OR FLORIDA OX CART.

But to cart and spread it looked like a Herculean task, and one I had not been much accustomed to; but here again I was fortunate, for one of my neighbors, having sent for what is here called a gopher or Florida ox cart, objected to it because he thought the body was too low, or near the ground, *to run over stumps*. Now it struck me *I did not want a cart to run over stumps*, but to haul and spread manure, and that this was the very thing for my purpose. So I took the cart off his hands, bought a fine yoke of oxen, and if ever a man had a reason to be pleased and satisfied with his bargain, I was that man, for here oxen were by far the cheapest motive power I could possibly have, and the gopher cart the very thing I wanted; for one of my half grown boys can load and manage it far more easily and readily than a grown man can the common ox cart; and I keep it running the whole year round as regularly and constantly as I do my ploughs in crop season, and it is astonishing what a quantity of manure is hauled out and spread by this machine, and at such a trifling cost. This cart, I find, is not only a superior manure cart, but for any and all other plantation work I would not exchange it for any other cart I have ever seen. It is so easy and convenient to load and unload.

It is true, it will not run over high stumps, but that is a trifle compared with its advantages.

As I am told this cart is neither used nor known anywhere else, I will give a brief description of it. I think it might be used in other countries as well as Florida, as it is quite a simple and inexpensive machine, considering its advantages: The wheels are high, with a broad tread, so as to run easily over this light, sandy soil. The body hangs near the ground, so as to be *easily* loaded, and *not* easily overturned. It tips or dumps the load when required, like the common cart, but there is an adjustible manure-spreading attachment behind, which works well, and has been of great service to me. It is certainly a very convenient and complete ox cart, and is, no doubt, the cart referred to by your former correspondent "Anclote."

SEA-WEED FOR ORCHARDS.

Certain tides here leave a large amount of sea-weeds and grass upon the shore. These I have carted and spread among my trees as a mulch. This keeps the ground cool, and prevents the weeds and grass from growing, and the vigor and healthy appearance of my trees plainly tells that they are well treated, and my plan a good one.

DRYING FIGS—GUINEA GRASS.

Figs do remarkably well upon this coast. Last year we dried about six bushels, and thought them almost or quite equal to the Smyrna figs.

I have a small patch of a Southern grass with which I am delighted. I had the seed sent me from Jamaica, where, I am told, immense herds of cattle and horses are raised and fed and flourish upon this grass.

It is known as Guinea grass, and was originally brought from the coast of Africa. It is a coarse grass, and very sweet. My cattle and horses feed upon it with great avidity, preferring it to all and every other grass, and it certainly makes a rich and nutritious pasture. With this grass I believe Florida, with its mild and pleasant climate, might be made one of the finest grazing States in the Union.

SOIL, CLIMATE AND PRODUCTIONS.

The coast climate of Florida is very healthy and pleasant. The land, as a general thing, is naturally very poor, but usually there is plenty of material to make manure within reasonable distance. Tropical fruits and all kinds of garden vegetables do remarkably well. Sea Island or long cotton is perfectly at home here, and as yet has no enemies. There is plenty of wild honey in the woods, and all kinds of game abounds. The sea is alive with fish, and we have the finest kind of oysters, clams and crabs for the gathering. There is any amount of government land, and a few dollars will give you a homestead.

Now, if you can find any better place than this, don't come here. I have tried to give you a true statement in reference to West Florida, and if any of my old friends or acquaintances, or any other Carolinian will make me a visit, they shall receive a hearty welcome, and I will show the country, *for I do want neighbors.* Come on; but if you believe you can live here without money or without work, stay where you are, for the Florida cracker is as good as you are. He will not cultivate the soil, but he will attend to cattle.

JAMES JOHNSON.

Mullet Creek, Florida, May 15th, 1871.

Clover and the Southwest.

A friend writing me from the Valley of the Mississippi, says: "This is the poorest country in the world for agricultural papers; indeed it's poor for everything, if greenbacks be the standard, for money can't be had."

The same letter says:

"Clover proves to be the most profitable crop we can grow here. A piece planted in the neighborhood will produce two tons to the acre. I intend to plant ten acres next fall; I believe it will effect an entire revolution here."

Success attend this young planter. If he succeeds in introducing the growth of clover into the Mississippi Valley, he will be the Agricultural Daniel Boone of that country. If there are anywhere in America blind leaders of the blind, they are to be found amongst the cotton planters of the Southwest.

With a country equal in fertility to the Delta of the Nile, they have impoverished themselves by clinging with fanatical blindness to the calture of cotton, whilst nature with powerful certainty has been persuading them they were on the road to ruin. My young friend has seen the delusion; let him profit by it.

I spent the month of March, 1870, in the vicinity of the Father of Waters, and was amazed at the practical extravagance of the planters of that section. Many of them, who boasted of making ten bales of cotton to the hand, and a bale of cotton to the acre, etc., had not money enough by them to subscribe to THE RURAL CAROLINIAN. And why? Simply because the exclusive cotton system of the country required one bale of cotton to grow another bale. Of course there is no money in that kind of management. At a landing on the Mississippi, I saw two boats discharging cargo; one discharged 1,250 sacks of corn, the other 300 bales of hay. I observed they were all marked to the same man. I sought him out; found him to be a planter; went home with him, and, lo! on every acre of waste land he had, clover was standing from eight to twelve inches high. Thus the indigenous growth of the country was urging him to "patronize home industry," whilst he was importing, at a heavy outlay, these very products from Louisville and Cincinnati.

During my sojourn in the Valley, I saw but one man profiting by the suggestions of Nature, and he was a South Carolinian, who since the war had assumed the management of several large plantations on the lower Mississippi, and who is an occasional correspondent (F. W. J.) of THE RURAL CAROLINIAN. This gentleman had hands mowing clover with ordinary grass blades, and was supplying the mules with hay grown on the plantation, whilst the previous custom had been to import hay from Cincinnati, or wherever it could be bought cheapest.

There is not an acre of good cotton land in the Mississippi Valley, but that would pay well, (and better than in cotton,) if sown early in the fall in red oats, and in the spring in red or white clover. And this system would be adopted if it were not that every planter in that section is like Jacob, when he went into the land of Goshen—he ever wishes his bones may rest in the land of his nativity. There is no fixity in the homes of these Western planters. Thousands of them who have gone from the old Atlantic States, still hanker after "Home, sweet Home;" and, but for the insatiable yearnings of human nature, would soon strike tents and move back to the scenes of their first love. If every planter in the old Southern States could see "Life in the West" as I have seen it, there would be but little emigration during this generation.

D. W. A.

Gypsum is said to check the ravages of the cabbage lice, which were so destructive last year. When gypsum is applied the lice do not appear.

How Soils are Made.

Prof. S. W. Johnson, in his admirable little work "How Crops Feed," gives the following lucid account of the formation of soils. The farmer may find in it hints that can be turned to profitable account:

ANTIQUITY OF VEGETATION.

Geological observations lead to the conclusion that but small portions of the earth's surface-rocks were formed previous to the existence of vegetation. The enormous tracts of coal found in every quarter of the globe are but the residues of preadamite forests, while in the oldest stratified rocks the remains of plants (marine) are either most distinctly traced, or the abundance of animal forms warrants us in assuming the existence of vegetation previous to their deposition.

DEVELOPMENT OF VEGETATION.

The mode in which the original inorganic soil became more or less impregnated with organic matter may be illustrated by what has happened in recent years upon the streams of lava that have issued from volcanoes. The lava flows from the crater as red-hot molten rock, often in masses of such depth and extent as to require months to cool down to the ordinary temperature. For many years the lava is incapable of bearing any vegetation save some almost microscopic forms. During these years the surface of the rock suffers gradual disintegration by the agencies of air and water, and so in time acquires the power to support some lichens that appear at first as mere stains upon its surface. These, by their decay, increase the film of soil from which they sprung. The growth of new generations of these plants is more and more vigorous, and other superior kinds take root among them. After another period of years, there has accumulated a tangible soil, supporting herbacious plants and dwarf shrubs. Henceforward the increase proceeds more rapidly; shrubs gradually give place to trees, and in a century, more or less, the once hard, barren rock has weathered to a soil fit for vineyards and gardens.

Those lowest orders of plants, the lichens and mosses, which prepare the way for forests and for agricultural vegetation, are able to extract nourishment from the most various and the most insoluble rocks. They occur abundantly on all our granitic and schistose. Even on quartz they do not refuse to grow. The white quartz hills of Berkshire, Massachusetts, are covered on their moister nothern slopes with large patches of a leathery lichen, which adheres so firmly to the rock, that on being forced off, particles of the stone itself are detached. Many of the old marbles of Greece are incrusted with oxalate of lime left by the decay of lichens which have grown upon their surface.

HUMUS OR VEGETABLE MOULD.

By the decay of successive generations of plants the soil gradually acquires a certain content of dead organic matter. The falling leaves, seeds and stems of vegetation do not, in general, waste from the surface as rapidly as they are renewed. In forests, pastures, prairies and marshes, it reaccumulates on the surface a brown or black mass, termed humus, of which leaf-mold, swamp-muck and peat, are varieties, differing in appearance as in the circumstances of their origin. In the depths of the soil similar matters are formed by the decay of roots and other subterranean parts of plants, or by the inversion of sod and stubble, as well as by manuring.

DECAY OF VEGETATION.

When a plant or any part of a plant dies, and remains exposed to air and moisture at the common temperatures, it undergoes a series of chemical and physical changes, which are largely due to an oxidation of portions of its carbon and hydrogen, and the formation of new organic compounds. Vegetable matter is considerably variable in composition, but in all cases chiefly consists of cellulose and starch, or bodies of similar character, mixed with a small proportion of albuminous and mineral substances. By decay, the white or light-colored and tough tissues of plants become converted into brown or black friable substances, in which less or none of the organized structure of the fresh plant can be traced. The bulk and weight of the decaying matter constantly decreases as the process continues.

With full access of air and at suitable temperatures, the decay, which, from the first, is characterized by the production and escape of carbonic acid and water, proceeds without interruption, though more and more slowly, until nearly all the carbon and hydrogen of the vegetable matters are oxidized to the above-named products, and little more than the ashes of the plant remains. With limited access of air, the process rapidly runs through a first stage of oxidation, when it becomes checked by the formation of substances which are themselves able, to a good degree, to resist further oxidation, especially under the circumstances of their formation, and hence they accumulate in considerable quantities. This happens in the lower layers of fallen leaves in a dense forest, in compost and manure heaps, in the sod of a meadow or pasture, and especially in swamps and peat-bogs.

The more delicate, porous and watery the vegetable matter, and the more soluble substances and albuminoids it contains, the more rapidly does it decay or humify.

Practical Hints on Irrigation.

Unless we entirely misapprehend the growth of public opinion upon the subject of irrigation, (*Hearth and Home* says,) there will be considerable attempted in that line within the next twelve months all over the older settled States.

The fall is the best time to make preparation. Across every brook that has in any of its windings an altitude above any other portion of the farm, build a dam which shall be so constructed that the pond thus formed can be lowered one foot if it is large, and two feet if it is small, in a short space of time.

The theory is this: Few streams on ordinary farms will suffice to keep constantly wet (were it desirable) any very large portion of land. Wetting twice each week, or three times, is better than nothing; and if you can accumulate sufficient water to make a stream that will flow to the end of your channel, and thoroughly wet all the section intended once in forty-eight hours, or once in twenty-four, it is far better than to have the little stream spend itself on the ground contiguous to the dam and adjacent to the two or three first openings in the sluiceway.

All that can be done in the dry season is to prepare the dam. This can be made, probably, cheapest on farms where stone is abundant, by digging a trench anywhere from two to four feet wide, as the height of the dam is to be, and then in this trench laying a wall as solid as may be, slanting from the bottom to the top on both sides, and then filling in the upper side from four to six feet with gravel.

If the water is to be taken out both sides, little flumes must be inserted in the wall, which, around their outermost edge, will need a sheet of board piling to prevent the water from working under, and thus doing damage.

Where there are no stones, earth will answer, if the overflow is guarded by a section of boards laid on the top of the dam, with a board at each side, exactly in the shape of a wide spout. The upper end of the platform must be piled to prevent the water getting under it and carrying away the structure.

When the early fall rains come, and the pond is full, trace your ditches, giving about six inches fall to sixteen feet. The water let into a little furrow made with the corner of a hoe will indicate the proper level which, when accomplished, the plough and the shovel will finish the ditch and the work is done.

How to Keep Our Boys on the Farm.

"I don't see, for my part, what this country's coming to!" exclaimed my neighbor, as he dropped in on Monday evening; "so many of the best boys are quitting the farms. Why, when I was a boy," he proceeded, warming up with the recollection, "it was considered a religious duty for one of the sons in every family to succeed to the homestead of his father; and the steadiest of his brothers pursued the same honorable calling. Now and then, a promising youth adopted a profession; but, as a rule, not to be a farmer was thought about equivalent to being a vagrant. *Now* how is it? Why, bless me! three quarters of our boys are deserting the shelter of the farm-roofs, leaving their fathers' acres to more patient plodders from Ireland and Germany, and eagerly seeking refuge in the strange city. What *can* have got into them?"

Such a state of things is surely to be deplored. The prosperity of a nation always depends on the thrift and happiness of its rural people. The sources of this dissatisfaction ought to be removed. As they are numerous, so is the remedy complex.

1. *The homestead must be made more attractive.*—A thrifty farmer's boys generally see that their father's house is built more carelessly and kept more slatternly than that of the city merchant. Their first unconscious inference is that fine houses are the exclusive product of the city; their next deduction—"that's the place to live."

What is the picture which they too often leave behind when they take their flight? A house unpainted and without blinds; a barn rickety and hastening to decay; rheumatic fences, offering kindly passage to hungry horses and filthy, bony cows; in the foreground, obtrusive piles of neglected tools, wagon-wheels, old iron, and infinite rubbish; in the background, a dreary waste of skinned and plundered fields! Without any expense, except a little time and taste, our farmers' homes can be embellished and rendered delightful; and only so can the best youths of this generation be induced to remain in the homesteads of their fathers.

2. *Farmers must seek a higher social training.*—A few of the best educated and cultured men of America are farmers, and their studious sons are gracing the same occupation. But such are a small proportion of the whole.

> "The fault, dear Brutus, is not in our stars,
> But in ourselves, that we are underlings."

Farmers ought, as a class, to cultivate better manners in parlor, kitchen and field; at fireside and table. Urbanity and rusticity originally meant merely city life and country life; it is not by accident that these words have

come to signify politeness and boorishness. Only through human contact can we acquire polish, and, by lack of this attrition, we, as a class, have come to undervalue the affable manners which mark the gentleman. Integrity and benevolence are not a guarantee of politeness; there must be added to these intercourse with well-bred people.

To recover what we have lost, or gain what we have missed, let us seek to construct a society about us, to encourage neighborhood gatherings, farmers' clubs, agricultural societies, and evening parties of every innocent kind, that may bring us in contact with others. To this end let us try coöperative farming—thousands fly to the city because they wish to "see folks." To this end, also, we can, if we will, learn from our wives, for they are often better read and usually better-mannered than we.

3. *Progressive farming must be substituted for routine farming.*—Abolish the plodding system; break up traditional routine, and the boys will stick to farming. Scientific farming does not mean the adoption of fancy theories; it means learning from the laws of Nature, and the experience of other practical farmers, how to exchange bad habits of husbandry for better ones.

Mind governs matter; and no art or profession demands for its perfect development so much general and special information, and so wide a range of science, as does the tilling of the soil. Yet, agriculture, as commonly practised, is to-day behind every other art. Farmers have studied less to master their calling than have the members of any other trade. How many thousands there are, in every State, who never see an agricultural journal or book! Such farmers lack new ideas more than they lack new implements. Their minds need subsoiling more than their grounds!

To make farming attractive to our boys, the drudgery of routine farming must be given up, and the scientific Why must be taught. This is the day of transition between muscle and mind, between brawn and brain. Thought is being introduced as a new lever to relieve the elbow.

Inventive genius has strewn over a single county of Ohio more agricultural machinery than could be found in the whole West a few years ago; and it is changing the whole character of farming as an occupation. One intelligent man now can do more than a stupid hundred, and derive from it more pleasure and profit. Farm machinery is not only labor-saving, it is consequently civilizing, because it saves human toil, it tends to elevate and refine our people.

Progressive agriculture carries a blessing to the future. The progressive farmer builds tasteful and commodious dwellings, with fuel and water convenient, and every accessory that can lighten the good wife's toil; he adorns his grounds from time to time with shrubs and flowers; he grafts pippins and greenings on the native stock, sets out new orchards, and takes care of old ones; he obtains the handiest tools and houses them; he builds stalls for cattle, and raises roots and steams fodder to feed them. He adapts the soil to the needs of vegetable life; if wet, he drains; if light or sterile, he turns under clover, and mixes more tenacious soil; if sour and cold, he gives lime; and he almost always ploughs deeply and manures liberally.

He teaches his sons not only how to plough, but why to plough; not only how to manure, but what is the effect of various fertilizers; not only what will thrive best on a given soil, but the reason for it; not only how to drain and irrigate, but why—because if they know the Why, they cannot forget the How. Thus he turns their eyes from their State capital to their own township, school district, home, and cultivates that local patriotism which is the foundation of the nation's strength. *Such farming pays*—morally, mentally, and pecuniarily. W. A. CROFUT, *in Hearth and Home.*

Agricultural Miscellany.

THE LUPINE AS GREEN MANURE.

Lupine, grown centuries ago by the ancient Romans, and long fallen into disuse, is now attracting a good deal of attention, especially as a fertilizer. In Germany, large estates, which, on account of light, sandy, or exhausted soils, were almost worthless, are now, by the cultivation of the lupine, producing in value as much as those of the best soil. Where formerly, for want of meadows, a hundred sheep were kept, a thousand will now get through the winter without trouble by using lupine as fodder. The yellow lupine is probably best adapted to this country.

The secret of the fertilizing quality of the lupine is to be found in the following observations: First, the root of the lupine, which contains a large quantity of moisture similar to the turnip, absorbs more energetically than any other plant the phosphate of lime and natural ammonia of the soil, thus making the latter digestible and accessible to other plants; second, it dissolves the chemical constituents of minerals by the evaporation of its roots, which is impossible to other plants. Thus the impure soil becomes enriched with a humus containing ammonia, and a considerable quantity of alkali, phosphate, etc.

There is little, if any, lupine seed in the country, but probably some will be imported in time for sowing next spring.

THE OTHER SIDE OF THE PEANUT QUESTION.

The editor of the *Carolina Farmer*, who has had long experience in the Peanut culture, thus corrects some of the mis-statements and exaggerations which have lately received wide publicity through the press:

There is more humbuggery, and more misrepresentation, concerning this crop than any other we know of. The ground pea crop is a *difficult* one to make. It requires a *fertile* soil, though of light and sandy character. The soil of a peanut farm requires to be continually renewed by heavy dressings of marsh mud, woods litter and lime, and the putting of a piece of land in order for a single crop costs a good deal more per acre, than is required to *purchase* good cotton land in the South. It is a very *exhausting* crop, and it is, therefore, customary not to take a crop of peanuts from land oftener than once in three years. We have never heard of an acre of land, along the seacoast, where peanuts constitute the market crop, producing more than ninety-five bushels per acre, and an average crop is about twenty-five or thirty bushels. A great deal of land does not produce more than twenty bushels after undergoing a tolerable amount of preparation.

THE IMPORTANCE OF SHADE FOR THE SOIL.

In warm climates the preservation of moisture in the soil is of the utmost importance. The effect of water, with the united powers of light, caloric, and electricity, on vegetation, even on poor soil, is really wonderful. The irrigated lands of Lombardy, Algiers and Spain, furnish the best proofs of it. The more the land is shaded the longer it retains moisture; consequently the black or naked fallow, as it is practiced in the North of Europe, would be

very injurious in the South. The soil between the rows of hoed crops should be covered with plants for green manure, or for forage, such as cow peas or buckwheat, to shade it, and thus prevent the evaporation of volatile substances and water.

BURNING OUT STUMPS.

In the Northwest, we are told, they have adopted a new method of getting rid of stumps. In the fall they bore an inch or an inch and a quarter hole, according to its size, vertically into the middle of the stump, eighteen inches deep, and put into it from an ounce to an ounce and a half of saltpetre; fill the hole with water and plug it up. In the spring they take out the plug, and put into the hole from half a gill to a gill of kerosene, and ignite it. It will go on burning without any blaze until the whole stump to the extremity of the roots is consumed, leaving nothing but ashes. The stump must be moist: an old dry stump will not be penetrated by the saltpetre. We have no great faith in this process, especially for our pine stumps, which, we fear, the nitre would not penetrate, but wish some one would try it and report results.

COMPOSITION OF COTTON SEED.

From the interest felt in, and considerable attention paid to, the converting of cotton seed into oil and stock food, we presume the following table from Prof. Voelcker, will be one of public interest:

	Decorticated Seed.	*Whole Seed.*
Water	8.29	11.34
Oil	16.05	6.18
Albuminous Compounds	41.25	23.72
Gum Sogo Mucilage	17.44	30.98
Woody Fibre	8.92	21.24
Mineral Matter, Ash	8.05	6.54
	100 parts.	100 parts.
Nitrogen	6.58	3.79

MANURE FOR IRISH POTATOES.

A Scottish agriculturist, as the practical result of very numerous experiments, recommends, for Irish potatoes, per acre, superphosphate of lime 6½ cwts., muriate of potash 3 cwts., and sulphate of ammonia 2½ cwts. This, he adds, will be found for potatoes much better and safer as regards disease than farmyard manure; and if the latter be valued at 8s. per ton laid down in the field, the above mixture will be found also cheaper, even taking into consideration the after effects of the farmyard manure.

THE VALUE OF IRRIGATION.

Dr. March, in his lecture on "Spain and the Pyrenees," says that land irrigated in Spain will sell, everything else being equal, for $500 an acre, while that alongside of it, not irrigated, will only bring $50 an acre. One company organized in Madrid with a capital of $1,500,000, has reclaimed 300,000 acres of land, and are paying dividends equal to 18 per cent. on the investment.

Department of Horticulture and Rural Art.

The Cultivation of Broccoli.

Broccoli is a variety of the cabbage which presents the greatest analogy to the cauliflower, and is only a sub-variety of it. Considered as a vegetable, it is preferable to it for the two reasons of its size and the delicacy of its heads. It is a native of Italy, but is little cultivated in France, not because its cultivation is more difficult than the cauliflower, but because it is less valued by the consumers, to whose taste the professional gardener is obliged to conform. The same cultivation in every respect can be applied to it as to the cauliflower; reserving for it in the garden the most sheltered part, and most southerly exposure. It is preserved during the winter in the same way as the cabbage, and the cauliflower, when its head is fully formed at the beginning of winter; but a great many varieties do not finish forming their heads till the spring of the ensuing year. Those heads which are the least formed at the beginning of winter ought to be taken up, with all the earth possible; a trench made sufficiently deep to hold the plants, stripped of their lower leaves, in which they are to be buried, leaving out only the heads, which ought to be carefully covered with straw or other litter during freezing spells. Broccoli thus treated grows slowly during the winter, and finishes its growth in the spring. [This taking up, etc., is not necessary in our climate of South Carolina.] A skilful English gardener, Mr. Wood, who has for fourteen years devoted himself specially to the cultivation of broccoli has found that the best manure for this plant is a mixture of sea-sand with the droppings of the horse. Gardeners at a distance from the sea easily replace the sea-sand by fine sand watered with salt water. Broccoli can be cultivated without transplanting. For this purpose places are marked out twenty-four inches each way, and three feet for the largest varieties. Four seeds are sown in each place in order to retain only the most vigorous plants, which are otherwise treated like those transplanted. The English, being great admirers of broccoli, have a great number of varieties, all derived from the white and the violet, by hybridizing accidentally or incidentally. The admirers of this vegetable, too little appreciated in France, will, no doubt, be thankful to us for pointing out the best varieties cultivated in England. The seeds are easily procured from our seedsmen. Broccoli, with suitable care, will succeed everywhere in France; to the south of the Loire better than the cauliflower.

1st. Purple Autumn Broccoli. Its heads are of a green color, mixed with violet; it is sown in May, and furnishes its heads successively from the end of August to the beginning of December.

2d. Early Purple. It grows about three feet high; besides its principal head it furnishes small lateral heads at the root of the leaves, which, like the flowers, are of a light-green mixed with violet.

3d. Dwarf Purple Violet. This is the slowest of the broccolis to form its heads, not finishing to form them until the April and May after it is sown. The plants have altogether only a height of ten to twelve inches, and the heads, which take on a conical shape, are sufficiently large and of a delicate flavor.

4th. Broccoli with a green, firm head. The heads never become very large, but are of a handsome green, heading in January and February.

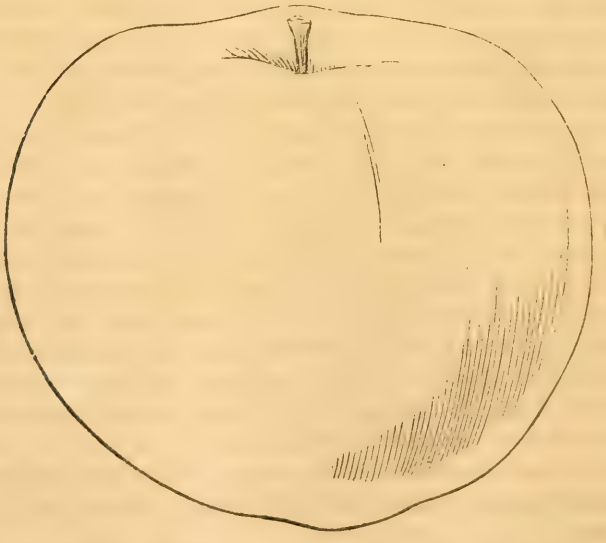
5th. Yellow or Sulphur Colored. It is sown in April to furnish heads in the April following. The English gardeners esteem it among the best.

6th. Green Broccoli with a close head. It is sown in March in order to obtain its head at the same time the following year. This variety grows very vigorously, and the plants ought to be set at least three feet each way.

7th. Portsmouth Broccoli. This is the largest of all known broccolis, its heads are often twenty-four inches in circumference. Like the preceding, it ought to be set at least three feet each way.

8th. Broccoli of Siberia or Denmark. An excellent late variety. It is to be desired that the cultivation of this broccoli were extended into the north of France. It resists perfectly, in the open air without any shelter, the most severe winters of the climate of Great Britain. Its heads are of a pale green, and yield in no respect, either as to volume or quality, to those of any other variety.—*Translated from "Maison Rustique," by R. C.*

Fourth of July Apple.



This beautiful apple, notwithstanding its name, is of European origin, being introduced from Cassel, Germany, where it was known as August Apple. When it fruited here, specimens were found nicely colored, and

nearly, or quite ripe on the anniversary of our national birthday. For this reason, and being full of enthusiasm for his adopted country, the German who imported it, re-named it the Fourth of July Apple.

Tree a vigorous upright grower, forming a handsome pyramidal head; shoots stout, leaves and blossoms large. Fruit, above medium size to large, roundish, oblate, sometimes conical, often slightly ribbed, especially the earliest ripening specimens. Color, pale yellow, nearly white in the shade, with distinct stripes and splashes of bright red in the sun, and covered with a delicate white bloom. Flesh, yellowish-white, tender, juicy, quite acid; good, though not first-rate flavor.

It is a fine kitchen apple, well suited to this purpose when but half grown. Cooking tender; its brisk acid, when properly tempered with sugar, makes a very agreeable sauce. It is extremely hardy, an early bearer, and very productive; ripens a little before the early harvest, and for several weeks thereafter. It is valuable for family use and profitable for market. Twenty dollars have been received for a season's crop from one tree.

How to Pack Grapes for Market.

When the grapes are fully ripe the bunches should be cut from the vines with a pair of hand-shears, always taking hold of the stem when moving the bunch. This precaution is necessary, so that the "bloom" may not be rubbed off by handling the berries. The grapes are then carried from the vineyard to a cellar or packing house. All green berries should be removed from the bunches before packing. This can be rapidly done by holding up each bunch by the stem and cutting out the unripe berries with a pair of long, pointed scissors. Grapes bring higher prices in New York market when packed in small boxes, holding not more than five pounds each. These boxes are now manufactured extensively in grape-growing districts, and at very low prices, by the quantity. They are made of either very thin slips of wood, or stiff pasteboard. When ready to pack, the bunches should be carefully placed in the boxes, one bunch at a time. The box should be shaken a few times while being packed, so that the fruit will settle firmly and not be displaced by the jarring of railroads, or rough handling on the way to market. When the cover is removed from a box of grapes that has been well packed, the stems of the bunches are not visible and the berries of the top layer should be level with the side pieces of the box. Eight, ten or a dozen of these small boxes may then be encased in a strong but roughly constructed crate, similar to those used by Southern "truckers" in forwarding vegetables and peaches to Northern markets. The consignee should be notified by mail of each shipment, stating clearly, but briefly, the quantity and quality of the fruit shipped.

The bunches of grapes should be assorted at the time of gathering. Small or straggling bunches should not be packed in the same box with well-formed shouldered bunches. Each kind will bring more when packed separately.

The class of buyers who are willing to pay high prices for large and well-formed bunches will not buy poor bunches at any price.

Carelessly gathered and badly packed grapes, sent from a distance to New York, or other Northern markets, arrive in a damaged condition and are sold at a low price, if at all; and this has heretofore been the case with much of this fruit shipped from the South. There must be a reform in this matter, or grape growing for market will not pay.

The Miner Plum.

This variety, the *Horticulturist* says, has excited considerable attention at the West, particularly in Wisconsin, where the fruit has been exhibited. This fruit is an improved variety of the wild plum, and is deserving of notice

at our hands. It can not, of course, take rank with our finer cultivated varieties, but in sections where these fail, it is well worthy of trial. Joel Barber, of Lancaster, Wisconsin, says "that it has been cultivated in his vicinity for many years, and is the only satisfactory kind there grown, being of vigorous habit, free from disease and perfectly hardy."

How to Prune a Dwarf Pear Tree.

A correspondent wishes to know what form the head of a properly pruned dwarf pear tree should present. It is impossible to bring all varieties to the same shape, their habits of growth being different, but the accompanying cut shows the general form aimed at—the pyramid. We shall be glad to publish from the pen of some experienced pear-grower brief practical directions for pruning. Our own opinion is that we generally prune too much.

The Navel or Bahia Orange.

A writer in the New York *Journal of Commerce*, calls attention to the remarkable excellence of this variety, and we can fully endorse his recommendation. We hope some one will undertake its introduction into Florida, where, we have no doubt, it would succeed admirably.

The Navel orange is said to be a hybrid accidentally produced at Bahia, Brazil. Large quantities of them are seen in the market of Bahia, where they are sold at two or three cents each. Their average weight is about one pound, the skin a bright yellow and of moderate thickness, the meat crisp, juicy, sweet and of delicious flavor. Their great peculiarity lies in the fact that they are *seedless*, and that each has within it—as in a womb—a smaller orange. The blossom end of the "Nivella" (navel) orange is formed into small protuberances such as characterize the "belle fleur" apple. In some, the smaller orange seems to be trying to break its way out of its mother. On removing the skin and separating the lobes of the large one the small one is found in size as large as a hen's egg, and skinless, except at the projecting end. The lobes of the small one can then be separated, and in them there are the rudiments of seeds, small, soft and tasteless. In the lobes of the large one there is no appearance of a seed. There is no appreciable difference in their quality.

This truly excellent fruit would, no doubt, sell for three or four times the price paid for fruits of the same class usually raised in this country. It is certainly worth trying to introduce its culture into Florida. There must be places where it could be grown successfully—along the coast south of St. Augustine. It would, of course, have to be propagated by roots, slips or buds. And these could be procured through the agency of the steamers which ply between New York and Brazil regularly every month.

Cultivation of the Lily.

The cultivation of the lily, the *California Horticulturist* says, is very simple; it requires a deep soil enriched with very old rotten manure. The bulbs should be planted from six to eight inches deep, and should not be removed more frequently than every three or four years. The most of the lilies improve if allowed to remain in the ground for a number of years. Unlike hyacinths or tulips, the roots should not be kept out of ground for any length of time, and if they are not replanted immediately, they should be covered up with dry soil so as to exclude the air as much as possible. They can be cultivated successfully in pots, deep pots being preferable. The lilies are propagated by seeds, offsets, and also by scales of the old roots, which will form themselves slowly into bulbs.

These remarks, intended for application in the climate of California, are also suited, in the main, to the South. All lilies—the Golden Japan Lily among the rest—are perfectly hardy here. If they suffer at all, it is from the heat and drouths of summer, and this can be prevented by mulching.

Horticultural Miscellany.

MANURE FOR A GARDEN.

We are convinced that no family in the city or town need buy manure for a garden of not more than one acre. A careful arrangement of the hen-house, where no more than a dozen hens are kept, whereby dry earth and slops from the wash-house are incorporated, with the droppings, will produce more manure than is generally applied on the largest garden. The earth closet will alone enrich at least half an acre. If a pig is kept, the weeds, leaves, and litter gathered from the garden and swept from the lot, thrown with dry earth into the pen during the year, will make several loads of the richest compost for garden or field. The cow-pen, also, yields a large quantity.

OUR AMERICAN CLIMATE.

Mr. W. Robson, of London, associate editor of the *Field*, who lately visited the United States, thus speaks of our climate:

"O, Americans, never blame the climate, for it is an admirable one. The succulent vegetables of the old country grow here, with very few exceptions, and by their side you gather the ears of the stately and graceful maize—most useful of its wonderfully useful family. Muskmelons, better than those which cost an English country gentleman six dollars each to produce in hot-beds and in glass houses, grow side by side with your delicious sweet potato, which I used to grow as a curiosity in a hot-house.

"Our popular Williams' pear, (you call it the Bartlett,) larger, sweeter and more golden than with us, falls by the side of egg plants, with fruit so large as to be a constant cause of surprise to me who had often grown the fruit to the size of a turkey egg in hot-houses in England. Rosy-cheeked English apples are seen above the quaint, large flower of the okra, which to us is an impossible exotic. Blessed by every variety of climate, and with its peoples not hedged out from each other's improvements by strange tongues, I look forward to the time when this vast country shall be more famous for rural beauty than for the wealth of her many cities."

A NEW THEORY OF ORCHARD CULTURE.

Mr. Meehan, editor of the *Gardeners' Monthly*, who is not only a scientific botanist and horticulturist, but a close and careful observer of nature, says:

Nearly twenty-five years ago, we found that the *root fibres* of trees were only *annual*—like the leaves they died every year. In 1853 we published it as a fact; we have fought it through until we believe it is now accepted as *scientific truth*. They have the same relation to the main roots as the leaves have to the branches, except that while the leaves are the preparers of the food—the cooks,—the fibres are the providers—the husbandman of the cooks. Just as the branches are of use only as supporters of the leaves, which, like the ancient rib of Adam, are formed by morphological laws out of tree bodies; so the main roots are only of benefit in so far as they afford the material out of which fibres are formed, to hold the tree in position, and possibly, in a very small degree, to draw in moisture.

Remembering this, now take up very carefully a young tree, and we find that the fibres are nearly *all on the surface*, and that they decrease in number and importance with every inch of depth. In the largest trees scarcely a fibre will be found one foot from the top, large roots—tap roots—you may and will find, but no root that is of the slightest benefit to the *nutrition of the tree.* How then a tree can be benefitted by the destruction of this large army of agricultural laborers, toiling at the surface to maintain the growing nation thriving in its many industrial occupations above them we do not understand.

Mr. Meehan therefore advocates the non-culture of the orchard, allowing it to grow up to grass, in preference; though mulching, to prevent the growth of grass, is better.

THE WHITE JAPAN MELON.

This is in quality of flesh one of the best but not so productive as some others. It is of a medium size whitish green, slightly netted, flesh greenish white, melting, and delicately sweet. Henderson describes it as having yellow flesh, which is true of some specimens, but in general it is as described above. There are few if any better melons.

A GIGANTIC WATER LILY.

Among gigantic flowers and leaves, we have the Victoria Regia, a water lily, thus described by its discoverer: "The leaf on its upper surface is a bright green, in form almost orbicular, except that on one side it is slightly bent in; its diameter measured from five to six feet. Around the whole margin extended a rim from three to five inches high, on the inside light green, on the outside like the leaf's lower surface, of the brightest crimson. The calyx is four-leaved, each sepal upwards of seven inches in length and three inches in breadth: at the base they are white, inside reddish brown, and prickly outside. The diameter of the calyx is from twelve to thirteen inches; on it rests the magnificent corolla, which, when fully developed, completely covers the calyx with its hundred petals. When it first opens it is white, with pink in the middle, which spreads over the whole flower the more it advances in age, and it is generally found the next day altogether of a pink color; as if to enhance its beauty, it is sweet-scented.

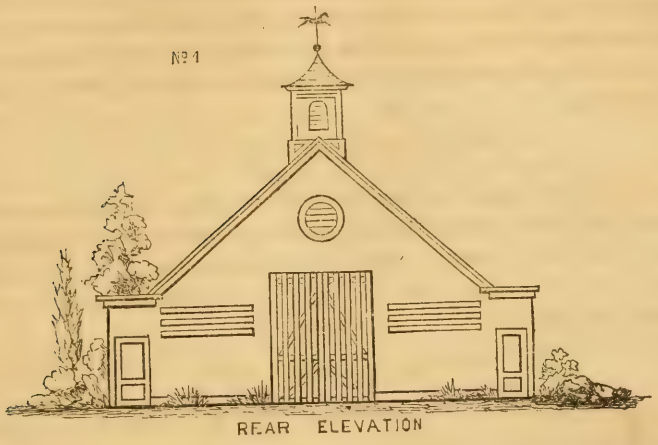
The Victoria Regia was discovered in the river Berbice, in British Guiana, and named in honor of Queen Victoria. It was successfully cultivated and flowered, first in England, and since then in several instances in this country.

THE CHINESE TALLOW TREE.

The *Croton sebiferum*, or Tallow Tree, is a native of China, and resembles a pear tree. The trunk is short and thick; the bark smooth, the leaves dark purple, or bright red, and the blossoms yellow. The fruit is contained in a husk which opens when this fruit is ripe, and discloses three white grains, about as large as a nutmeg. These yield the vegetable tallow which, when properly prepared, makes excellent candles. There are also tallow trees found in other countries.

Department of Rural Architecture.

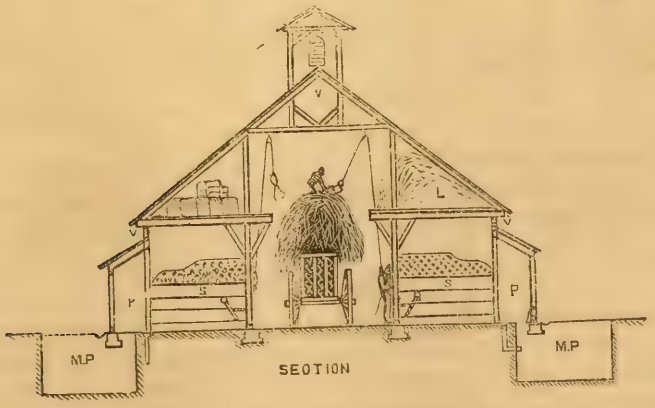
Stable for Twenty Horses.



REAR ELEVATION

In previous numbers of THE RURAL CAROLINIAN, I have given plans and estimates for the construction of cheap and convenient farm buildings. As a fitting supplement, I offer, this month, plans and elevation for a stable of more enlarged dimensions.

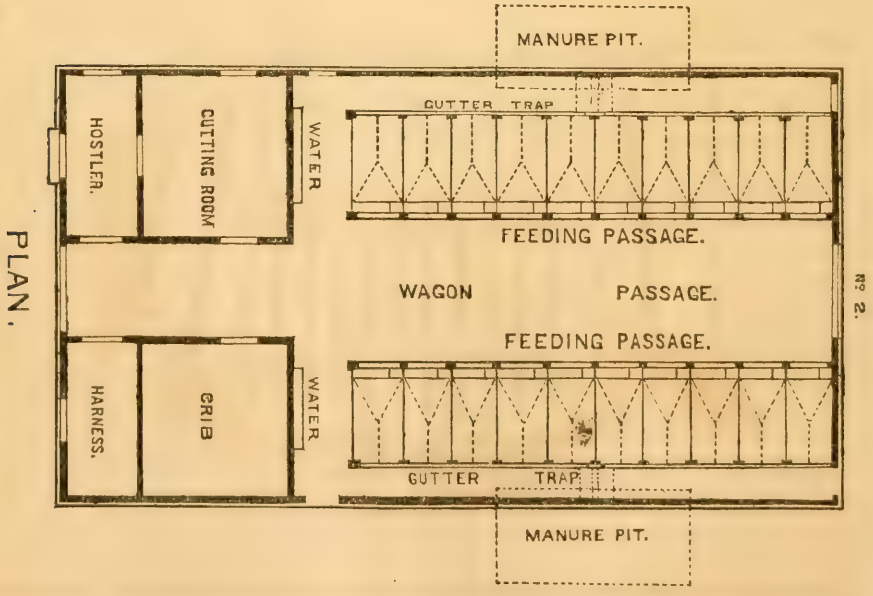
This structure is to be made of wood, and slightly elevated on a brick foundation. By the plan, you will observe that provision is made for stalling twenty horses or mules, and each stall is provided with feeding racks, mangers



SECTION

and fittings of modern style. The liquid droppings are conducted by a sunk gutter, through a stench trap, into the manure pit, the construction of which has been treated of in detail in previous numbers of this Journal.

An abundant and convenient supply of water is provided for by placing a cistern either in the loft or under the ground. Water troughs are arranged against the partition walls, out of the way, and are shown on the plan. The animals are led out through the passage, in either direction, and they are fed from the central passage without disturbing or vexing them. The cutting room and crib are conveniently located and of sufficient dimensions to fulfil the requirements called for by the design. Hay and forage stuff are deposited in the loft, and for convenience of storage, one-half of the upper tier of joists are cut away, as shown in the section, to allow a heaping load of hay to come into the building, to be unloaded by forks or block and tackle. As soon as the load has been discharged the wagon passes out easily under the covered way of the other portion of the loft and passes out of the front door, which is not constructed as high as the one in the rear. In the cutting room a funnel or trap is to be constructed to pass the hay down to the cutting machine. The loft is reached by means of a wall-ladder constructed against the studding in this latter room. The importance of having a harness room is acknowledged by all, and the same should be furnished with sufficient hooks and baskets to keep the harness and brushes off the floor. Harness should not be kept in the cutting room or crib, for the dust arising from the provender is injurious to them, and the smell of oil and grease about harness is obnoxious to horses, coming to them through their feed.



In a well regulated stable the hostler should have his room, and provision is here made for him with a door opening outward from his apartment.

The importance of thorough ventilation cannot be too strongly urged, and the same should come from a height, above the animals; and if the importance of the stable commands it, one or more cupulo should be erected on the roof, and surmounted with an appropriate vane. Scale of Designs 1-16.

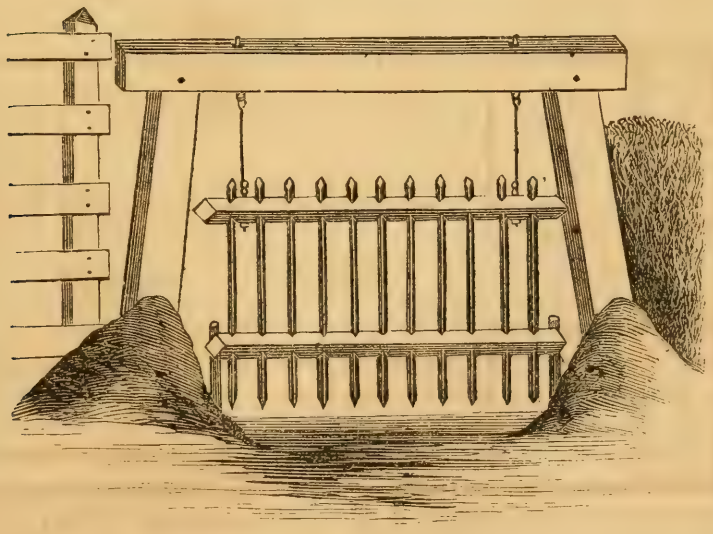
In connection with this article, and in conclusion, I will extract from my note book a very simple and easily-tried mode of deodorizing a stable:

Sawdust, wetted with sulphuric acid diluted with 40 parts of water, and distributed about stables, will remove the disagreeable ammonaical smell, the sulphuric acid combining with ammonia to form a salt. Chloride of lime slowly evolves chlorine, which will do the same thing; but then the chlorine smells worse than the ammonia. Sulphuric acid, on the contrary, is perfectly inodorous. The mixture should be kept in shallow earthenware vessels. The sulphuric acid used alone, either diluted or strong, would absorb more or less of the ammonia, but there would be danger of spilling it about and causing serious damage; and besides this, the sawdust offers a large surface to the floating gas.

ALEX. Y. LEE,
Architect and Civil Engineer.

Columbia, S. C.

A Self-Cleansing, Self-Adjusting Water Gate.



We regret having lost or mislaid the letter which accompanied this admirable design. It tells its own story, however, and renders description unnecessary. If the originator of the plan will again send us his name, he shall have due credit.

Department of Labor and Immigration.

The Question of Labor in the South.

It has been said there is not a "sufficiency of labor in the Southern States to develop her agricultural resources." And that which we have has been underrated and condemned as worthless; but I am inclined to the opinion that we have in the negroes as good laborers as the world can produce; and that by proper organizations among planters and land-owners, they can be made as efficient now as they have been in the past. And if not adequate to the full supply of all of our wants, I think they will be found sufficient for our present purposes until, by the operations of natural causes, others are secured, especially as they are acclimated, and familiar with all the details of the farm and plantation.

In the past they were a part and parcel of the lands on which they operated; they were well organized, well disciplined, quiet, orderly and efficient, and produced results which have gone far to enrich and build up the North, whilst they contributed largely to the comfort and refinement of the South.

It is equally true, that at the present time they are a demoralized, idle, dissatisfied set of gulled human beings, seeking after that they know naught of, and which is ever eluding their grasp. This is the effect of a too sudden and premature emancipation. What is the remedy? I believe it is to be found in a well regulated system of labor, and in a judicious organization among planters and land-owners.

Can the negroes be blamed for their present demoralization? Cannot freedmen be organized and disciplined as well as slaves? Is not the dollar as potent as the lash? The belly as tender as the back? Can it be expected that an ignorant, half civilized and inferior race, just emerging, as they are, from a state of slavery to a condition of freedom, should see through all the mazes that involve them, and at once adapt themselves to their true condition? Blinded, misled and bedeviled as they are, are they not more the objects of pity than of blame? And does it not become us, as the more enlightened and experienced, to combine and devise some well regulated, well digested, just and equitable system of free labor, which each individual concerned in should carry out in good faith, as not only involving his own and the interest of communities, but the destiny of a people?

Having devised such a system, we should collect the broken fragments of a hitherto efficient labor, and strive to make it as efficient as it has been in the past. This can only be done by combination, and by standing shoulder to shoulder as men determined to solve this knotty problem, and to secure the public good. I am aware of all the difficulties in the way of success, but by united and persistent effort, these difficulties will melt like snow before the summer's sun. We cannot control the waves of the ocean, yet we do construct vessels sufficiently strong to bear us safely over them.

In organizing gangs, the employer should never lose sight of the fact that he is "boss;" and that success or failure depends entirely upon himself. And in proposing terms and conditions, they should be such as will insure good order; for upon this depends the successful management of any business. There should never be but one arrangement with the laborer, and that should be the first. All innovations upon an agreement already made, and which ought to be binding on both sides, will tend to demoralization. Before entering into an agreement, it is always well to hear what each laborer has to say; and I will venture the opinion that no two will agree upon the same contract. When the matter has been fully canvassed, and their different modifications and amendments suggested, simply ask:

"What are you going to give me to work with you?"

This will startle and confound them, and they will say:

"Why, boss, we thought you were the one to pay us!"

"Exactly so; then if I am the responsible party, I claim the right to make such contract, and impose such conditions, as will best subserve my interest, and secure me against loss, aud at the same time secure to you the faithful and honest discharge of my part of the agreement. I am the one to plan and direct, you are to obey. I employ and pay you for what I order done; you are to do what I require. If my terms do not suit you, why there is an end of it; you will not suit me."

Now, I will venture to say, that nine times in ten this straightforward, independent course will gain their confidence as well as command their respect. And there will be but few found who will not be willing to work, when the determination to secure order, and the chances of even handed justice is made so apparent. It is a mistake to suppose that negroes can be coaxed into measures. They must be *controlled*, or they are perfectly worthless as laborers. This control can be had through the operations of a superior intelligence, as readily as by the more coersive remedies formerly used, and will be the more salutary as it can be made to appeal directly to their interest.

After the terms and conditions of the agreement have been fully entered into, there should be no deviation from the correct line of proceeding with delinquents, and upon the wilful infringement of any plantation rule or regulation, the offending party, unless he submits himself to the discipline necessary to the preservation of order, should be promptly discharged, even were he worth a dozen hands. And no neighbor ought to employ such discharged laborer, as he is equally interested in the preservation of order and the maintenance of discipline.

Laborers so discharged should be forced to spend the time intervening between their discharge and the commencement of another year as vagrants, and if taken up and punished by State law, his education and improvement will have commenced. Discipline must be enforced, if the aim is to preserve order and secure success. And no laborer should be allowed to remain on the plantation after having assumed an attitude antagonistic to discipline.

Study well the capacity of your plantation, and employ no more labor than is necessary, with the assistance of animal power and improved implements, to effect the object to be attained; and then, if the labor of the rural districts is found inadequate, let our townsmen and villagers come to the rescue, and see that their streets are swept clean of the useless idlers that now infest them, and force them to seek employment in the more healthy occupation of the farm, where they will have fewer temptations and fewer wants, and where they will become useful producers instead of idle consumers; a blessing, instead of a curse to humanity.

A well regulated, uniform system of labor, carefully observed, and good rules and regulations strictly enforced, with kindness and a high sense of justice on the part of the planter, or his agent, in all business transactions, would, I believe, work wonders. It would at least show to what extent the South is deficient in labor, and would open the way for others. For when those which we now have are organized under some uniform and practicable system, are actively and profitably employed, more would come. In the meantime, let us strive to organize and discipline them.

AN OCCASIONAL CONTRIBUTOR.

Charleston, S. C., March 26th, 1871.

The Overworked.

What shall we say upon this subject? We know that many *are* overworking themselves, bringing on a premature and painful old age, and from the very necessities of the case, this does oftentimes seem to be unavoidable. But does it necessarily follow that because, in many cases, people *do* overtask themselves, that they *must* do it? Can there be no system of labor devised that will meet our necessary bodily wants, and yet leave time for attending to the amenities and esthetics of life? If so, would not that man be a benefactor who should point out to us the way to attain this end?

Much appears in our public journals upon the labor question, the feasibility of employing Chinese, etc. But this concerns the monied man who is able to *employ* labor, and live in ease himself, and not those who are obliged *themselves* to labor for a living. It is for the latter that my suggestions are given. I am the friend of the poor man; I wish to see his condition bettered and himself elevated in the scale of human society. And I call upon poor men everywhere—and the workingman, he who labors at some honest calling—to look more to their own mental and physical interests, and to cultivate a little more of the refinements of life. If your lot *is* a rugged one, can you not manage to strew, now and then, a few roses along your pathway? If the most of your time *is* necessarily given to menial labor, can you not, by adopting a more judicious system, find some time for rest and that delightful and useful recreation, reading? Certainly the *whole* of your time is not indispensable to the securing of food and raiment. That must be a

poor system of labor that results in no more than this. What, then, are you working for? To amass wealth? To heap up riches that so often take to themselves wings and fly away? Idle folly! Why vex the mind with such corroding cares? Why wear out the body prematurely at this incessant toil, or, in other words, why destroy the body for the sake of the body? It seems to me that a strange infatuation, or an unaccountable want of forethought does possess our laboring classes. The mischief is, they read too little. They have no taste for it, for hard labor *is* unfriendly to mental culture. I know this by personal experience, and I see no remedy but the very simple and much needed one of diminishing the amount of labor. And this brings me to the main purpose of this article; to point out a system of labor that will meet all the necessary requirements of life, and still leave time for recreation, mental improvement and pleasure.

My plan, which some have tried and found to be a good one, is simply as follows:

Divide each working day into *three* periods of *eight* hours each. Let one one of these periods, say from 9 P. M. to 5 A. M., be devoted to sleep; another to recreation, reading, study, music, etc., and one to labor. Eight hours to sleep, eight hours to play, eight hours to work. This seems to me to be a natural and sensible division of time; and it has much to recommend it.

To the laboring man eight hours is none too much for sleep. Each one, of course, could choose his own time for this. Perhaps, take the year through, from 9 P. M. to 5 A. M. is the best time for sleeping. It has been said that "one hour's sleep before midnight is worth two after it;" but I have lately read somewhere "a plea for late hours," tending to show that late rising, especially in summer, is not detrimental to health. I am inclined to favor the idea. At any rate, I do not think that Somnus should be cheated out of his rightful dues. Perhaps, to the literary devotee, who sits locked up in his sanctum from day to day, there is something exceedingly shocking in sleeping away one-third of one's existence; but let this same *literatus* labor as attentively, for a few days, in the fields of nature as he now does in those of literature or science, and he will pretty soon be willing enough to sleep away his eight hours daily.

The question next arises, can we afford to take away from the remaining sixteen hours eight for mental and physical recreation and pleasure? I do not think that many would succeed in making a living, *by their present system of management*, by working only eight hours a day. But I hold that the labors of the farm *may be so arranged*, the management of crops so systematized, that this will not only be *practicable*, but *easily attainable*. My plan is to do away with the old system of working *many* acres of *poor* soil, but to reduce the area and apply home-made manures. By drainage, thorough preparation and manuring, it will become easier and cheaper to raise *more* from *one* acre than upon *four* acres of poor, worn-out soil.

This once attained and followed up, and it becomes easier to live by eight hour's labor than by sixteen in the old way. This, of course, will leave

ample time for recreation, mental and physical, and the culture of many of the refinements of life. And no doubt the system of labor best adapted to this end is a *concentrated* system of agriculture, or *high culture on small farms*, the raising of an abundance of vegetables and fruits, in connection with the poultry yard, the dairy, and the apiary. Such a plan of labor is capable of being made a *pleasant recreation*, instead of, as it too often is, a *menial drudgery*. But, first, the man himself must be enlightened.

Will not every reader, then, who labors with his own hands for a living, adopt and follow some such plan, and show to those around him that such is attainable, that labor is not degrading, and that so conducted, it is not unfriendly to intellectual culture. Let each one try to induce his neighbor to become a *reading* and a *thinking* man, as well as a *laboring* man.

I dislike to speak of myself, but to encourage and increase the number of those who read, is my aim, and will say to such, that I am a laboring man. I earn my bread by the sweat of my brow, and by that only; but all my leisure time I devote to reading and study. I never enjoyed a college education, and what little I know I have obtained by my own efforts at spare moments, on rainy days, and by pine-knot fires during our long winter nights. Poor men of the South, I am one of you; I know your wants, for I have felt your condition, intellectual and financial, is not what it should be, but it is in a great measure *your own fault*. You wear out your life at hard labor, but it is not rightly applied. You must discard the old-time things—many of them—that have brought you so low in the scale of human existence. You must look higher, aim at something brighter and better. Man was never made to follow one ceaseless round of rugged toil. Time must be had for educating the mental faculties, for training the heart in goodness and virtue, and preparing for a home in Heaven. To this end let us labor and pray.

Cottage Home, Surry Co., Va. B. W. JONES.

Utilization of Cotton Fibre.—A communication was presented to the British association at its late meeting in regard to the utilization of the fibers of the cotton seed. The author expressed his astonishment that a vegetable production which was capable of so many important applications, and could be supplied by millions of pounds, was now entirely wasted, the amount thus thrown away in America alone being a million and a half tons. According to Mr. Rose's estimate, as the seed is composed of fifty per cent. of kernel, yielding about one-third of oil, and fifty per cent. of husk, one-third of which is fibre, the wasted seed should produce 250,000 tons of pure cotton, 250,000 tons of oil, and 5,000 tons of cattle cake, representing the value of $1,000,000. The husks could then be taken to a paper mill and the cotton abstracted in such a state as to form most valuable material for paper. By a process devised by the speaker, the cotton fibre could be completely separated from the shell. He stated that a very slight alteration in the ordinary machinery for manufacturing paper will enable this material to be utilized.

Dairy and Stock Department.

Is the South a Stock Country?

"A sheep's a sheep," is the idea entertained by most cotton planters, never dreaming that amongst sheep there are as many varieties as amongst other breeds of animals. That keen legged, half-hair, half-wool animal known as the native sheep, seems to be *sui generis*. All other kinds of sheep are noted for some one or more distinguishing characteristics; the Cotswold and Bakewell for their size and long wool; the South Down for their quality of mutton, and the Merino for their fine wool. The "Native" has them all—size, wool and mutton, but none of them in a commendable degree. It is, however, a capital basis upon which to build up a valuable flock; but no sheep were ever remunerative to the planter, who kept them simply because they were sheep. A purpose must be had in view by every one proposing to grow sheep, and if all of their varied sources of revenue are economically utilized, no animal can compare with them for net income. What are these sources of revenue?

First, then, is the manure, which is universally admitted to be exceedingly valuable; but, to be properly appreciated, the sheep must be folded or hurdled every night from April till December, and housed the remainder of the year during the night. If this system is followed, noxious weeds, young broom sedge, and even green pine-straw, will be converted into a valuable manure, and carried and deposited just where it is wanted. When deposited, too, it is invariably distributed with more evenness and regularity than could be done by hand.

Another peculiar feature on this point is, that sheep grazing in an old field, or upon young grain, habitually rest to ruminate upon the poorest spot in the field, and before leaving it always make a *cash* deposit. Galled, poor spots are usually the highest portions of undulating lands, and thence it is they are sought for by the sheep.

I have often seen it stated, that one thousand sheep will enrich an acre of land in a single night. This is a great mistake; they will scarcely do it in a fortnight. One thousand sheep folded upon an acre of reclaimed land will in one night restore to it more than a single crop will take off, but this is not enriching impoverished land.

Three years ago I penned seventy-five sheep for sixty nights, on two lots of one-fourth of an acre each; the land was miserably poor, red clay. The next spring twenty bushels of barley was the harvest, and a beautiful stand of clover. Last spring a luxuriant crop of clover was taken from the lot, and a short growth turned under in the fall. Last May a crop of wheat was harvested, and to-day, (20th June,) the lot is beautifully matted with a heavy growth of clover and orchard grass. (The grass seeds were sown with the

wheat last fall.) In the same proportion, a flock of one hundred sheep will permanently enrich four acres of impoverished land in a twelvemonth, so that it will produce luxuriant crops of grain, to be succeeded by permanent grass, thus making the increased value of the land equal almost to the prime cost of the flock. I can conceive of no investment returning a surer, or a greater per centage to the farmer.

Beef cattle and hogs pay the cost of their rearing by the penalty of their lives. They must be butchered or sold to remunerate the planter. Not so with sheep. They grow an annual crop for market, as well as reproduce their kind to replenish the flock; and, if given the attention they deserve will not only enrich the soil sufficiently to pay rent for pasturage, but by their annual clip will return the entire cost of their keep, besides producing one hundred per cent. upon the number of ewes.

Wool is a staple commodity; and, as I have before said, one of man's necessities; it will, therefore, always find a market. In what condition to sell it, whether washed or dirty, is a question among sheep growers. Sheep may be washed by being quickly dipped or submerged in running water a few times, and then placed upon clean lots or floors for a week until sheared. To wash wool by hand after shearing is a process that usually injures more than it benefits the wool. I have never sold washed wool for more than sixty-five cents per pound, nor unwashed for less than thirty. The deduction made in market for the loss in weight in merchantable washed wool, is so extravagant, that it seldom pays to wash sheep. Cuckleburs will injure the sale of wool more than is justified by their weight, for all factories have bur machines, which prevent any loss by these pests except their real weight. They should never be allowed to mature on any plantation, and the surest way to eradicate them is to pasture the land with sheep. In two seasons they will destroy the weed.

Sheep shearing is a tedious and laborious job. An experienced hand can shear a native sheep in half the time he can a fine-wool sheep. Fifteen a day is about an average day's work for ordinary *Southern* shepherds, though I have seldom found a negro who could shear seventy-five in less than a week, and then most of them would be very roughly finished. Southern flocks, (if a dozen here and there over the South can be called flocks,) are sheared almost at any time after the 15th of April—"no postponement on account of the weather." I never shear until after the 1st of May, and often delay this job until the middle of May if the weather is not comfortably warm. More than half the diseases of sheep in the South can be traced to too early shearing. If the owner will but for a moment reflect upon his own liability to disease by doffing too early his woolen garments, humanity will prevent his inflicting like injury upon this patient animal.

At shearing time, I usually alter, mark and wean my lambs; they are then about four months old, and able to nip the young grass, which now begins to grow rapidly. Most authorities on sheep husbandry, advise this work (except weaning,) when the lambs are but a fortnight old. I adopted the spring habit, simply, because lambs remaining entire until four months old grow

more rapidly, and become more vigorous animals. After this operation, too, they should remain quiet, and if allowed to follow their dams will ramble too much, and often induce irritation, that results fatally. When marked, the lambs are turned into a barley patch or oat field until weaned, say a fortnight, and then returned to the flock. The ewe lambs seldom become mothers the next winter.

At lambing time, the sheep of course are penned or housed every night. In a majority of cases lambs are dropped at night. The next morning the ewe and her lamb are turned into a barley patch, to remain for a week, and then driven to an oat or rye field, from which they are seldom taken, day or night, except in bitter cold or falling weather until about the 1st of March. This last spring, however, my ewes and lambs were kept for five weeks (all of February and last week in January,) on five acres of clover without a drop of water, an additional feed, or a moments attention beyond an occasional salting. The ewes kept in good condition and the lambs grew as if they "lived in clover."

As soon as the flock is sheared the ram should be taken from them and fed regularly, in a pen or lot to himself, until about the 1st July. I usually turn mine, with a wether or two, into an oat field. They will eat more weeds than oats, and become very fat. For six weeks after 1st July he is returned each alternate week to the flock. After the middle of August, in company with some old ewes and wethers, he is again allotted a good pasture, and there kept until his companions are converted into mutton, after which he is returned to the flock to remain until shearing time. Occasionally, a well grown yearling ewe will produce a lamb at fifteen months old. If so, I generally destroy the lamb as soon as dropped. Lambs yeaned after 1st April are not worth the trouble of raising.

Sheep allowed to ramble, and seldom if ever fed, will of course become very poor, and lose most of their wool; but I do not think it possible to starve sheep at the South, if the privilege of our fine old fields are granted them. They will eat any and everything that any other ruminating animal will, and survive where any other would perish save a jackass or a goat.

Though proverbially stupid, sheep resemble the human family amazingly in one or two respects. They are very prone to learn bad habits, and never forget the way to do wrong. Inattention, even in good pastures, permits and sometimes suggests these bad habits. If seldom changed from one grazing plot to another they will sicken of the pasturage, and find their way to another. This habit, once contracted, can never be broken. A jumping sheep will live and die such, and should be converted into mutton as soon as convicted the second time of the offence. Nothing learns the sheep to jump sooner than driving them through gaps in our abominable worm fences, while the gap is not laid down to the very worm. Cow-boys and calf minders delight in such sport, and will often make them jump out at a gap half laid down, just to see that they can do it. At the second opportunity the sheep will relieve the urchin of his trouble. If permitted to ramble with a worthless goat, sheep will imitate his nimbleness, and in a short time, made perfect by practice, will surpass his efforts at agility.

D. WYATT AIKEN.

The Domestic Rabbit.

Fancy Rabbits.

I was presented with a number of these animals by a friend, who, living in the city, found it inconvenient to keep them, and I was disposed to think at the time that they would prove to me, as many predicted, "more plague than profit." I took them, however, and as they were a source of pleasure to the children, I have paid some attention to them, and am happy to say that the predictions referred to have proven false, as they have rapidly increased, and are now to me a subject of great interest and profit, and so satisfied am I of their utility that I adopt this method of bringing to the notice of the readers of THE RURAL CAROLINIAN the merits, uses and habits of this beautiful animal.

To the farmer in this section of the country where wild rabbits abound, and prove oftentimes highly destructive to early crops, especially gardens, the questions which naturally arise here are what merit can there be in the domestic rabbit? Of what use are they more than to aid the wild rabbit in completing the destruction?

I had the same inquiries put to me repeatedly when I first turned my attention to them as one means of diversion; and after a fair and impartial trial of them, I am prepared to satisfy any person who may feel disposed to undertake their culture, that he can find nothing which will be more useful, or that can be reared at so little cost, with such satisfactory results.

A fact little known to many, that much, in fact nearly all of the fur which is used in manufacturing the capes, cuffs and muffs used by children is the fur of the domestic rabbit, ought at once to satisfy any one that the rabbit is of some importance, if only its fur is useful. The fur is also much used in the manufacture of hats, and the skin, after the fur for hats has been removed, makes excellent glue.

As an article of diet nothing better can be had, and as soon as the prejudice which some persons express to eating them is overcome, almost every one will express themselves fond of rabbit, however it may be prepared for

the table. In all countries of Europe it is a standing article of diet, and is sold as regularly as either beef or mutton, and many persons support themselves by raising them for sale as an article of food.

As will be seen hereafter, they can be reared with far less trouble, greater certainty of success, and in greater numbers than any species of poultry; are much less subject to disease, and much less expensive to maintain, and not at all more destructive than poultry.

The manure which is accumulated in the keeping of rabbits is excellent, and particularly serviceable in the culture of grape and other vines, greenhouse plants and all plants which have fibrous roots; and on this account the rabbit is especially useful to every one who may undertake the culture of the vine. Another use of the domestic rabbit to the planter who is a man of family is, that they will surely fall under the care of the younger members of the household, who, besides finding them a source of infinite pleasure and amusement, will be greatly benefited by learning a lesson of great usefulness to them, viz: that the successful raising of live stock depends upon forethought, forbearance, good management and proper attention. This, well taught to a boy, will be a lesson of usefulness in after life, that will be of incalculable value to him.

The rabbit has a merit also in this, that it is principally maintained and supported upon those articles which are perfectly useless, except to feed to it. Its diet is found in the tops and parings of vegetables, all sorts of weeds from the garden, which are cut out to benefit the garden, and a little dry food. The refuse from an ordinary kitchen garden, will, with the addition of dry food maintain a great number. The dry food referred to is grain, oats being best, of which, however, a far less quantity will suffice to maintain a rabbit than a chicken. Some persons have sought to detract from their value by saying, ten rabbits would consume as much as a cow. I am prepared to contradict this flatly, and assert, that I have, during the last winter, maintained thirty-seven grown ones and twice as many young ones, and their food has been the following: two bushels of oats per month, in the way of grain, and with green food, they were supplied from two garden beds of lucerne and rye, and a bundle of fodder when rain prevented cutting green food for them.

Their food is entirely vegetable. They feed upon almost anything green, such as grass, cabbage, weeds, clover, bean and pea vines, and are fond of any sort of hay or fodder, and will thrive and fatten on this sort of food, which, however, should be given them perfectly free from water or dew. They drink very little water, and if they are well supplied with food that is cut while growing, they should not have any water at all.

Mr. Bement, of New York, the author of a little treatise upon the subject, quotes a writer in an agricultural journal of that State, who says: "In England the rabbit formerly held the rank of 'farm stock,' and thousands of acres were exclusively devoted to its production; families were supported, and rents, rates and taxes were paid from its increase and sale. I remember once visiting the farm of Lord Onslow, in Surrey, containing about 1400 acres.

It was in charge of an eminent flock-master and agriculturist, who kept some hundreds of hutched (*i. e.* caged) rabbits for the sake of their manure, which he applied to his turnip crop; added to this, their skins and carcasses were quite an item of profit. * * * * These rabbits are very numerous in all the towns and cities of England, and form a source of amusement and profit to all classes, from the man of fortune to the day laborer." W. S. M.

Musty Oats.

A South Carolina correspondent of the *Maryland Farmer*, after reporting the loss of a horse, supposed to result from eating musty oats, says: "I am certain more horses die in the South from eating damaged oats than from all other causes. As the oats are cut rather green, and often with many green weeds among them, it is very difficult to keep them from moulding more or less in the centre. Many animals die from this cause, which are supposed to have had blind staggers, as in the case of mine. Another horse died recently near me, in the same way, after being fed on oats mostly sound, but some of the bundles musty in the middle."

Department of Natural History.

Specimens of insects, securely packed, (according to instructions given in our October number,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

"Potato Bugs."

There are no less than ten different insects that feed upon the foliage of or otherwise prove injurious to the potato, *Solanum tuberosum*. Among the Lepidoptera we find a large, green worm, closely resembling the tobacco worm, the larva of *Macrosila quinquemaculata*, Haw. feeding upon the leaves; another larva, producing a small moth, *Gortyna nitela*, Guén, bores in the stalk. The larva of a small beetle (*Baridius trinotatus*, Say.) bores into the stalk in the same manner, causing the plant to wilt and finally die. The larva of the three-lined leaf beetle, (*Lema trilineata*, Oliv.) which covers itself with its own excrement, is sometimes found in great numbers on the foliage. Other small beetles feed upon it in their perfect stages, but by far the greater damage is done by a few species of insects which are commonly designated by the name potato beetles, or, for short, "potato bugs."

Fig. 1. Colors, rust, red and black

In the Eastern and Southern States the most troublesome species belongs to the family of blister beetles, and feed upon the foliage of the potato in the perfect or beetle state.

The first of these, the striped blister beetle, *Lytta vittata*, Fig. 1, is more particularly a Southern species, although it is occasionally found in the New England States. Its color is rust, red, or dull tawny yellow, having two black stripes—sometimes three—on each of the wing covers, two black spots on the head and two black stripes on the thorax. The body beneath is black, covered

with a grayish down. The insect measures from one-half to three-quarters of an inch in length.

Another species, (*Lytta cinerea*,) Fig. 2, is very destructive to the potato crop in Massachusetts. It is also found on a variety of other plants and trees, as the English bean, honey locust, apple, etc. The body of the insect is densely clothed with wiry fine short hairs, which give it an ashen gray appearance, but becoming black whenever rubbed or otherwise injured. There is, however, a black species, *Lytta atrata*, which is met with, commonly, on flowers of golden rod.

Fig. 2. Color, grayish.

The margined blister beetle, (*Lytta marginata*, Fab.) Fig. 3, is stated by Mr. Riley, in his first report, to have been found by him feeding on the foliage of certain varieties of the potato, though its usual food is wild plants. Harris mentions, that in the Southern States they are to be found on different species of clematis. The insect is nearly three quarters of an inch in length; the wings are black, margined with a narrow line of gray. Its head and thorax are covered with a grayish down, and the under side of the body and legs are gray.

Fig. 3. Color black, margined with whitish.

The foregoing species, which are similar in shape, size and general markings, are to be regarded as *the* potato beetles of the Eastern (or Atlantic) States. In the West, however, THE potato beetle is an entirely different insect, not only belonging to another and a distant family from those we have just been considering, but differing in size, shape and color. As a foe, it is much more to be dreaded, as it is an almost incessant eater, both as larva and perfect beetle, taking leave of a field only when the food supply is exhausted. Nor does it confine itself to the foliage alone, but devours stalks and all, actually eating *down to the* ground. It is known in the West as the "Colorado Bug," or "Ten-striped Spearman," (*Doryphora 10-lineata*, Say.) Our illustration, Fig. 4, is a faithful representation of both larva and beetle. It is rapidly travelling Eastward, is already in Ohio and Kentucky, and in a few years more will reach the Atlantic States.

Fig. 4. Color, Beetle black and yellow, Larva black and orange red.

Another species of *Doryphora* (*D. juncta*, Germar,) has been found in the South, feeding upon egg-plant, potato, etc., which is very similar to the Colorado beetle, and lest some of our readers may meet with it and mistake it for *10-lineata*, we figure it also, (Fig. 5.) By comparison it will be seen that in *juncta* a broad black line occurs on each side of the wing covers, which in the other species is divided into *two* lines; there is also a black spot on the thighs of all the legs, which does not occur in *10-lineata*. The larva of the two species likewise differ in the number of spots on the side of the body.

Fig. 5. Color, beetle black and yellow.

We will not attempt to speak of the remedies against the Colorado beetle at present; "Sufficient unto the day is the evil thereof;" but will merely mention a few checks against the inroads of the blister flies, which are already with us. It has been recommended, as they appear late in the season, to plant early varieties of potatoes; or where they have taken possession, and are already at work, to drive them into a windrow of hay during the day time, when they readily take to flight, and then to set fire to it.

As a trap to catch them alive, Mr. Glover has suggested the following:

Fig. 6.

A vessel similar to Fig. 6 is made of tin, in the form of a spittoon, but rather deeper, and with the incline to the hole in the centre more sloping. This is taken to the field, the potato tops are bent over it and jarred or slightly shaken, when the beetles will roll down into and be fairly caught. The cover may be removed after a certain portion of the field has been gone over and the insects destroyed.

A NEW ENEMY TO THE POTATO.

In the preceding article various insects have been mentioned that are injurious to the potato, all working where their injuries are plainly seen, but this spring I found an insect working in the potato fields of Maryland that promises to be a foe indeed; the more so because it carries on its destructive warfare underground, where the damage is not seen, or its presence known. The attack is made on the freshly planted tubers by a maggot, which, in the specimen I examined, measured about a quarter of an inch in length. They bore through and through the tuber that has been planted for seed, in consequence of which it rots in the ground and fails to sprout. From the larvæ taken I have succeeded in rearing a number of two winged flies, probably belonging to the genus *Anthomyia*, which includes the onion fly, and several other very injurious species, that work underground in their first stages.

C. R. D.

Answers to Correspondents.

CABBAGE WORMS. D. H. J. The worms sent are the same as those received from you last fall. They "made up" immediately, and I have since obtained the perfect insect, fortunately both male and female. The insect is therefore without any question *Plusia brassicæ* Ril., and seems from their numbers, to be *the* cabbage worm of the South. Please try the remedy given for *Pieris rapæ*, in the March number of THE RURAL CAROLINIAN, and report success.

INSECTS NAMED.—W. H. R., Aiken, S. C. Thank you for the specimens of butterflies and moths sent some time ago. As far as I have made them out, they are as follows: *Macrosila cingulata*, Fab., *Deilephila lineata*, Har., *Choerocampa tersa*, Har., *Ennyo lugubris*, Walk., *Terias lisa*, B. &. L., *delia* B. & L., *nicippe*. B. & L., *Utetheisa bella*, *Agraulis vanillæ*, Cram., *Callidryas eubule*, Cram., *Pieris protodice*, B. & L., *Junonia coenia*, B. & L., *Argynnis columbina and Danais archippus*, B. & L.

"THE BEAN WEEVIL AGAIN."—"Simple exclusion of the air from them in a bottle, can or barrel," as proposed on page 539 of the last number, would be of no avail whatever, unless the weevils are kept *canned* during their natural existence; in other words, kept over one year, till the beetles had time to mature and die.

THE RURAL CAROLINIAN.

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"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

POSSIBILITIES OF CORN CULTURE.

The New York Farmers' Club, and after the Club, the agricultural journals of the North have, again and again, during the last twelve months discussed the corn question, with especial reference to the number of bushels per acre it may be possible to produce.

Some one claimed to have made one hundred and ten bushels. This called out the doubters, and the incredulity was very general among the members of the Club and among the agricultural editors. One went so far as to figure out the impossibility of even one hundred bushels of shelled corn being grown on an acre of land. He said:

I have found (by measurement) that it takes four stalks to the hill, hills three and a half feet each way, and two large ears to the stalk, to reach the quantity claimed to have been grown. However rich the land, corn will not mature so thickly planted, the ears being too much shaded, and you cannot find a man who will say he grew one hundred bushels of shelled corn, fifty pounds to the bushel, on one acre.

Whether this figuring be correct or not in its application to Northern cornfields, we will not stop to inquire; it certainly will not serve for this latitude and for our big Southern varieties of the maize. The calculation gives, if we reckon correctly, 288 ears to the bushel. Very small ears they must be, judged by our Southern standard. Here, one hundred large, well filled ears, are generally estimated to make a bushel. But we do not make crops on paper. We show in our present number what has been done here, and how it was done, and need only refer all doubters to Dr. Parker's Report, in connection with his letter, in our June number. This, however, though the most remarkable instance on record, is by no means the only one in the South in which over one hundred bushels of corn have been grown on an acre of land. S. W. Bloodworth, of Griffin, Ga., an account of whose premium acre may be found in the Report of the Department of Agriculture, 1869, page 271, obtained from a square 210 feet each way, 137½ bushels of shelled corn, or 135½ bushels to the acre. The cost of production was $120, and the total produce from the acre was valued at $257 71, showing a net profit of $137 71. Many years before the late civil war, according to our well informed cotemporary *The Carolina Farmer*, Nicholas W. Woodfin, Esq., of Asheville, Buncombe Co., N. C., produced 159 bushels of shelled corn on one acre of land, for which he was awarded a premium, we think, by the Agricultural Society of Buncombe County. A farmer of Davie Co., N. C., about the same time produced upwards of 150 bushels of shelled corn on two distinct acres, for which he obtained premiums from the Davie County Agricultural Society.

These facts indicate the possibilities of corn production in our climate; good land, heavy manuring, and thorough and judicious cultivation being implied. In view of what has been done, and can be done again under favorable circumstances, will our farmers rest contented with an average production of twelve or fifteen bushels to the acre, on land capable of yielding at least forty or fifty?

THE SMALL GRAINS.

Our readers will bear witness for us that if increased attention be not given to the growing of the small grains and the grasses in the South, it is not our fault. We have urged such increased attention "in season and out of season." It may be considered a little "out of season" now to remind the planter of the coming seed time; but it is not too soon to be thinking about it and making the necessary plans for the next small grain crops. A valued contributor and a sound practical planter, who has promised us an article for our August number, on the small grains, writes:

I am almost convinced the article should be in the July number, for I am sure we do not give a long enough season to the small grain crops. It takes twelve months to make a cotton or corn crop, and so should it require a whole year to sow, grow and harvest a small grain crop.

We fully agree with him, and hope our readers will commence as early as possible the work of preparation, and get in as large an area as suitable soil and thoroughness in breaking up will permit. Since we give little labor to the small grains, in comparison with what we bestow upon the hoed crops, we can, at least, afford them well prepared ground and time enough to grow.

COMMENTS ON THE JUNE NUMBER.

A valued and ever welcome contributor sends us some excellent and suggestive comments on the June number of THE RURAL CAROLINIAN, but they come to hand after the larger part of this number is "made up," and we can find room here for only a portion of them:

"AMERICAN SUMAC."—This is a step in the right direction—the utilization of our waste products, and providing employment for a class of persons who get the poorest pay for their work.

"HILL-SIDE HEDGING."—Has the writer ever tried it? If not, we would advise him not to "halloo before he gets out of the woods." This used to be an old Monticello hobby. It was tried there fairly; and if any man wants to have his fields monopolized by sprouts of sweet gum, sassafras, dog-wood, sour wood persimmon, briar, and every vile weed and pest, let him try it.

"COTTON IN HILLS."—AN OLD STORY.—Dr. Cloud, of Alabama, thought he had demonstrated this problem many years ago, but he failed to satisfy many of its feasibility. The great secret of success in the first place, in making a crop of anything, is "a stand." With the hill system, there is a great risk. Last year we saw a small field tried by a neighbor, and he made a splendid failure.

"IS THE SOUTH A STOCK COUNTRY?"—And Col. Aiken has culminated in sheep; well-a-day! what will become of all the poetry of "Love me, love my dog?" "Mongrel, puppy, whelp and hound and cur of low degree, Tray, Blanch and Sweetheart all, they bark at me." May be the Colonel thinks every dog has had his day, and it is time to *revenons á nos moutons. Nous verrons.*

"ON THE POSSIBILITY OF FORECASTING THE SEASONS."—A very suggestive paper. We think April and May have had their quota of 5.615 inches, and June has set in very much as if it intended to have its share too.

"LARDER PESTS."—The department of Natural History grows in interest. The pestiferous insects are on the increase. The introduction of foreign plants, trees and seeds, leads to the increase of new pests, and it is our interest to learn to discriminate between our friends and enemies. We have seen gardeners take great pains to kill the "lady bug," one of his best friends. The multiplication of shot guns and loafers will increase our troubles in this respect. Sambo is death on the little birds specially.

"SUMMER HINTS."—Very good and to the point. "Avoid whiskey" is good. During the war the refugees avoided a certain town in the interior, it was said, because the water was so bad that the inhabitants had to mix whiskey with it before they could drink it—good!

"THE BEAN WEEVIL AGAIN."—Neither will the spirits of turpentine or exclusion of air do always. We have tried it carefully. The safest plan is to plant a few late rows for seed. * * *

ADVERTISING SWINDLERS.

It is not our custom to make any allusion to the advertising department in our editorial columns. Our advertising patrons tell their own story, in their own way, and are alone responsible for their statements. We do not endorse them. We believe they are, in general, honest and honorable business men, and will do as they agree; but, as the reader will readily understand, we can not know them all or ascertain their character and standing in advance; so that, while we will not knowingly insert the advertisement of any dishonest dealer or swindling concern,

we are liable to be imposed upon by such parties, and our subscribers may suffer in common with us, by trusting them. A case of this kind has just been reported to us in the following note:

Editor Rural Carolinian:

You have, in your advertising columns, an advertisement from one Otis Tinckham, offering for sale Fine Fowls. I sent him $10 by postal order, for fowls, on April 1st. He has drawn the money and refuses to answer any letters directed to him. LEE.

A letter from the Postmaster at Plymouth, Mass., now in our possession, on whom the Postal order was drawn, shows that it was duly cashed at that office.

Another subscriber (T. J. M., Spartanburg, S. C.,) reports having been swindled in a similar manner by the same party. We regret the appearance of the advertisement in our pages. Our readers are now sufficiently warned; and it will be our duty, as a Patron of Husbandry, to cause a notice of these transactions to be sent to every Grange in the Union, North as well as South, so that no member of the Order can hereafter be swindled by the party referred to.

THE CROPS.

We have no full returns of the wheat crop in the South, or even in this State, but the tenor of the reports we have received indicate a light yield in comparison with that of last year. We hope, however, that it will prove better than at first supposed. Fall sown oats are generally good, so far as we can learn, but Spring oats are not promising. We are decidedly in favor of sowing oats early in the fall, (or late in the Summer—say August.) Corn, though backward, is generally promising, and we hope for a good crop if the grass (fostered by constant rains in some parts of the country,) be not allowed to smother it. Cotton is somewhat "under the weather," but there is time for it to come out all right yet.

Scribner's Monthly, for July, has several noteworthy articles, among the best of which are "Jaunts in Japan," of which some valuable information is given concerning out-of-the-way portions of that marvellous island; "Samson's Riddle Solved—the Lion-cup *versus* The Lion-cub," by which the learned writer appears actually to have discovered the solution of Samson's celebrated riddle, which has puzzled the world for three thousand years. "Wilfred Cumbermede" is continued, and there are several other entertaining stories, some readable poetry, and such editorials as only Dr. Holland can write. It is a favorable specimen of an excellent magazine. [Scribner & Co., New York. $3 a year.]

The old *Atlantic Monthly* still holds its place in the front ranks of American magazine literature, losing none of its freshness and vigor with the passing years. We can not always approve the sentiments set forth in it, but we can, at least, respect them as honest, straightforward utterances of opinion. The June number is full of interesting matter. "The Shifting of Power" is a thoughtful, political article on Balances and Checks in Government. "The Capture of Fort Fisher" is a chapter in the history of the late civil war. Miss Cheeseborough commences a story entitled "From Generation to Generation." "Mountaineering in Sierra Nevada;" Poems by Whittier and Lucy Larcom, and a variety of other miscellaneous articles make up the number. [James R. Osgood & Co., Boston. $4 a year.]

The annual Fair of the Georgia State Agricultural Society will open at Macon, October 23. For information, address D. W. Lewis, Secretary, Macon, Ga.

The biennial meeting of the American Pomological Society will be held at Richmond, Va., September 6th and 7th next. This meeting will be an unusually interesting one, and is likely to draw a large number of fruit growers together, from the South especially. We have received from the President of the Society, Hon. Marshall P. Wilder, a circular announcing premiums, but it came to hand too late for insertion in this number.

The *California Horticulturist*, (San Francisco, F. A. Miller & Co., monthly, $4 a year) fully meets our expectations, and is a worthy representative of the horticulture of the Pacific slope. We welcome it to our sanctum, and shall read it with pleasure, and,

we hope, with profit. We are pleased to note the soundness of its criticisms and the practical character of its instructions.

An article on "Immigration," by B. O. D., and another on "The Labor Question in Louisiana," by F. W. J., which had got mislaid among a mass of matter on hand, have just been unearthed, but too late for the present number. Will the authors please accept this as an apology for the non-appearance of their communications? We will try to get them into our next number.

FARM AND GARDEN NOTES.

The Value of Weeds.

Growing weeds for profit is not to be recommended in the garden, or on the same ground with any other crop; but weeds are not likely soon to be exterminated from our grounds, and there will be large quantities of them about the yard and garden to be disposed of in some way, and the gardener should by no means throw them out to dry up and rot by the road-side. Never allow them to make seed, but hoe them up, rake them into heaps, carry them to some convenient out-of-the-way place, sprinkle them with lime and cover them with a few inches of soil; they will soon decay and give you a fine heap of valuable manure. Or, if you should be planting, you may use them at once upon the ground, distributing them in the bottom of trenches, covering them and then planting your seed. For a fall crop of Irish potatoes nothing can be better.

Salt for Red Ants.

Common salt is a complete barrier to the red ant. It is necessary only to place it so that they cannot reach the spot or the article from which you wish to exclude them without passing over it. To keep them from a moveable cubboard or safe place each leg of it in a saucer or plate filled with salt. Water answers the same purpose, but, as it evaporates rapidly, there is danger that the ants will occasionally find a dry passage to the coveted eatables.

Broccoli from Slips.

A Scottish writer on horticulture says that broccoli—and why not cauliflowers and cabbages—may be propagated by slips. Everyone knows that all plants of the cabbage family show a tendency after they are cut to throw out sprouts or shoots from the stem. In this climate, in fact, our Spring cabbages generally do this immediately after the head has matured, whether cut or not. These sprouts, according to the writer alluded to, in the case of the broccoli, at least, may be stripped off and planted with entire success, watering and shading, of course, as with any other slips.

Fish Farming in Bavaria.

The farmers of Northern Bavaria go extensively into fish-raising, collecting the water from marshy places and drained land into fish ponds. Many farmers in this way realize as much from their water as their land crop. Those of our farmers who are troubled with an excess of water, might turn it to account by taking a hint from their German brethren.

Propagating Japan Lilies.

If a lily be taken up in Autumn, after the leaves have withered, there will be found upon the stem, just above the old bulb, a mass of small bulbs intermingled with roots. A dozen, and even more, are frequently found. The little bulbs may be removed and planted out separately, or the stem to which they are attached may be cut off just above the old bulb, and set out with the cluster of bulbs and roots attached. They should be covered the first Winter with a few inches of litter. The next season they will make strong bulbs.

The Ramie Machine.

We learn from *La Renaissance Louisianaise*, that M. Lefranc's Ramie machine has been introduced into Mexico where it is found not only to prepare the Ramie fibre in the most satisfactory manner, but also to be adapted to the decortication of the Sisal hemp, the Istle, Manilla hemp and other fibres. The Ramie plantation of the French Company, we learn from the same source, is doing finely, the million of roots planted growing luxuriantly.

The Bean Vine and the Sun.

On this side of the equator, all beans at all times twine the same way. Why? It has been a question whether the sun has anything to do with the matter. To settle this question, Prof. J. Parish Stelle, wrote to a friend residing in Brazil, just below the tropic of Capricorn, asking him how the bean winds

there. His friend replies, that *it goes around the pole in precisely the reverse direction from that taken in the United States.* How does the bean manage directly under the equator? Can any one tell?

Hot Water for Plants.

It has lately been shown, by careful experiment, that sickly potted plants, even some that have almost died out, can be greatly benefited, and sometimes, indeed, entirely restored to vigor, by applying warm water to them instead of cold. In certain cases, oleanders which had never bloomed, or did so only imperfectly, after being treated with lukewarm water, increasing the temperature gradually from 140° to 170° F., produced the most magnificent luxuriance of bloom.

Liquid Manure.

The *Practical Planter* says, that liquid manure in the hands of the industrious and enterprising gardener, is of inestimable value. Give alternate waterings of soap-suds and dilute urine (one part urine to five parts water) and the effect will be magical. Under this treatment, with the ground dug two feet deep, the most wonderful cauliflowers, cabbages strawberries, egg-plants, tomatoes, beets and radishes may be produced. Try it.

A Method of Growing Turnips.

The *Plantation* submits the following method of growing a turnip crop, which strikes us a good one—economical and sure:

Turn over in July or August a piece of ground, (broomsedge if you will,) follow the turning plough with a subsoil plough. Harrow first lengthwise of the furrow, and repeating the harrowing in both directions until the ground is made very fine; lay off the land in rows two and a half feet apart, drop phosphatic manure with a small per centage of guano, in the furrow at the rate of three to five hundred pounds per acre; cover the manure with two furrows; smooth the ridge with a board; sow the seed with a drill, thin to six inches when the plant is in the third leaf; hoe or use the cultivator or harrow once, and the process is complete.

MERE MENTION.

We note that the ship Hudson, Captain Pratt, lately sailed from London with a choice selection of stock consigned to the well known and trustworthy firm of R. H. Allen & Co. Among the stock shipped were 21 Jersey heifers and one bull, 35 Cotswold and South Down sheep, and 35 Berkshire and Essex swine. They will doubtless be advertised in THE RURAL CAROLINIAN on their arrival.

——Sulphur beds of great extent and remarkable purity have been discovered in the southeastern corner of Louisiana, and are now being worked by a company with a capital of $600,000.

——Vast ruins have been discovered in the Lulu country, in South Africa—obelisks, with colossal carvings; terraces and halls of hewn stone, or cut out of the solid rock. The natives regard them with mysterious awe.

——Tea culture is increasing in the South, and it is believed that tea enough will soon be grown for home consumption here.

——The sugar crop prospects in Louisiana are reported as exceedingly favorable. The Cuban crop is from 25 to 30 per cent. short this year, and advices from Europe indicate that good prices may be expected by the American planters.

——It is estimated by the Department of Agriculture (if we may credit newspaper reports) that the area planted in cotton this season will fall short of that of last year at least one million acres.

——It is proposed to introduce New Zealand flax into California. The fibre of this particular plant, unlike other species, is contained in the leaves.

——It is estimated that America, when her productive power is fully developed, will be able to feed four times as many persons as there are now on the face of the earth.

——In Burns' Valley, California, Dr. Delamont is cultivating ten acres of opium poppy.

——The southern counties of California are making strong efforts to introduce cotton culture, and a number of acres are cultivated for that purpose this year.

——Over 200 acres of castor oil beans are cultivated near Marysville, California, this year. A heavy yield is expected.

——*The California Horticulturist* says that several successful experiments have been made in feeding silkworms with Ramie leaves.

——Savannah, Georgia, is forming a stock company to introduce steam wagons for farming and freighting purposes.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

ON SELECTION AND IMPROVEMENT OF SEEDS.

Editor of the Rural Carolinian:

This is a subject which should claim more attention here at the South. All our cultivated crops are capable of improvement by proper care—cotton, corn and other cereals, fruits, vegetables, flowers, &c.

There is a tendency (more or less marked) to variation in all plants; and by taking advantage of it in selecting, year by year, these which have the qualities we wish to preserve and perpetuate, we may thus carry on improvement to such a state as almost to leave nothing more to be desired. The history of cotton culture in this country furnishes a notable example of what selections of seeds may accomplish under the stimulus of profit. A semi-tropical, perennial plant, of arborescent size, has been gradually changed, by long culture and selection of seeds, to a healthy annual of moderate size and herbaceous habits, and now so well climatized as to be pushed into high latitudes, and the valuable portion, the appendage of the seed, has been vastly improved, both in quantity and quality. The same may be said of the Irish and sweet potatoe. All our fine fruits, vegetables and flowers are the result of this same selection.

But experience also proves that many plants and animals which have been highly improved in certain localities, and under certain conditions of climate and soil, when removed, fail to keep up to their standard of excellence. The peculiar conditions (whatever they may be) under which they have originated, are necessary to perpetuate them, whilst there are others which, more cosmopolitan in their habits, retain their good qualities under more varying circumstances.

The most general conditions which affect plants are those of climate and seasons.—We have seasons very unlike those of the Northern States and of Europe, and it is for this reason that the selection and improvement of seeds suitable to our Southern latitude assumes an importance. The Northern portion of our country being similar in climate and season to Europe, may readily take advantage of the improved varieties which originate there. Here, at the South, we have a long season of warm weather, often intensely hot, with protracted droughts, which affects vegetation very seriously. Many of the best varieties of fruits and vegetables of the North fail here entirely. We are thus under the necessity of originating new kinds here, which will be better adapted to different conditions, or be left behind in the progress of improvement.

Under the stimulus of enormous profits for all new and improved varieties, and to satisfy the constantly increasing demand, which has grown into a fashion, great attention is paid to this matter at the North, and every year we see new things brought forward. When the improvement is decided, high prices are realized; and many very fine varieties have thus been added.

There is a wide field here at the South for such work, and we only need to have attention drawn to the subject. We see, annually, improved varieties of cotton seed offered for sale, and it is, doubtless, in this way, under the stimulus of gain, that so much has already been done. Our agricultural societies should take the matter in hand and encourage all such efforts.

We want improved seedlings of sweet potatoes. We want Irish potatoes that will keep for winter use; grapes of earlier varieties for market, and of later for wine-making; strawberries that can better stand our hot seasons, and go on bearing later in the summer. We have no good raspberries that are well adapted to our climate, and these could probably be obtained by Southern-raised seedlings. In a word, there may be improvement in all fruits and vegetables from selection of seeds; and kinds better adapted to our peculiar climate may be thus permanently established.

H. W. Ravenel.

THE ISTLE OF TEXAS.

Editor of The Rural Carolinian:

In my travels through Texas I have not met with any plant having the common name of Istle, nor can I find the name in any botanical work. However, I only have a few such books at hand, my botanical library being elsewhere, my studies of late years having been more of a geological than a botanical nature. If the Istle is the *Bromelia Sylvestris*, as you suggested, I do not think it is a native of Texas, as no species of *Bromelia* has been described or alluded to as among the plants collected in the Mexican Boundary Survey, or in the collections of Wright, Lindheimer and other botanists in this State and in Northern Mexico.*

* Since the foregoing was written, I have learned from Colonel Ford, of Brownsville, in this State, that the Istle is a species of *Agave*. He has promised to send me specimens of it, that we may know its true botanical name. It may be, and probably is, a variety of the *Agave Americana*. It is called by the Mexicans *Maguey*, and also Istle pronounced *Eastle*, with the accent on the first syllable. It is not cultivated in Texas, and that shipped from here to England was from Northern Mexico.

Several species of *Dasylirion*, of the natural order *Bromeliaceæ*, grow in Western Texas, and also in Northern Mexico, from the leaves of which probably an excellent fibre can be obtained, and it is possible it has been done. In Brazil very strong cordage is made from several species of *Bromelia*, the most valuable of which is the *Bromelia Variegata*, from the fibre of which the people dwelling along the River St. Francisco weave their fishing nets. The following circumstance is related in the Library of Entertaining Knowledge, Vol. Vegetable Substances, as a proof of the strength of cordage made from *Bromelia*. "A rope of it was in constant use for many years upon the wharf of the city of Paraiba, where it was employed for embarking merchandise, and it retained its strength unimpaired. On one occasion, the heavy anchors of a line-of battle ship were hoisted on board a vessel with this same old rope, after hempen cables, of a larger diameter, had been found inefficient for the purpose. This material is not so liable as other vegetable substances to be injured by the action of water." The figure of *Bromelia acauga*, given at page 104 of the work quoted above, resembles very much some of our species of *Dasylirion*, a genus, as before remarked, closely related to *Bromelia*. The pine apple, and also the long gray moss hanging from trees, (*Tillandsia*,) belong to the natural order *Bromeliaceæ*.

Several species of *Agave*, growing in Western Texas and in Mexico, are used for twine, cordage and other purposes. Chief among these is the *Agave Americana*, which in some parts of Mexico is called *Pita* and in others *Maguey*. A variety of this species is also sometimes called *Mescal*. I do not think the agriculturists of Texas have cultivated the Istle. Probably that shipped to England, alluded to in the October number of THE RURAL CAROLINIAN, only passed through Texas from Northern Mexico. As Mr. Macrea offers to furnish samples of the exact thing required, I suggest that you, Mr. Editor, write to him for the botanical name of the Istle, which, if he does not know, he can ascertain from some English botanist. There is little doubt but that the culture of the *Bromelia*, the *Agave*, and perhaps the *Dasylirion*, may be made profitable at the South.

S. B. BUCKLEY.

Austin, Texas, May 8, 1871.

A NATIVE WINTER GRASS.

Editor of The Rural Carolinian:

Having read, a few days ago, in your valuable and interesting journal, an article on the Winter Grasses of our climate. It was suggested to my mind to call your attention to an indigenous winter grass which grows very luxuriantly on the reclaimed marsh lands, and occasionally on the rich high lands of Sampson's Island, which is located on the seaboard between Bull's Cut and Edisto River.

Perhaps it would be well to give a cursory view of this Island and the soil of its adjacent reclaimed marsh lands.

The highlands or Island proper is composed of a mixture of silex and vegetable mould to the depth of eight or ten inches, and the subsoil of clay, a combination of which makes the finest soil I have seen in the South. The reclaimed marsh lands have, doubtless, been formed to some extent by the settling of the sediment or vegetable deposit that is swept down the Edisto River from time to time, consequently it is one mass of decomposed vegetable matter. These lands, in a state of nature, are a wilderness of marsh grass resembling cane, from four to eight feet in height. They have been under cultivation for twenty-five years or more, and previous to the war, under the management of the enterprising and energetic planter, Mr. J. M. Seabrook, it yielded from 250 to 300 pounds of lint Sea Island cotton per acre, which is evidence sufficient of its fertility; and being enclosed by large dikes to prevent their submersion by the rich tidal waters of the Edisto River, can be irrigated at any moment, and kept at any point of fertility necessary. I have been particular in mentioning these details to show under what circumstances this plant appears so thrifty, and whether it would thrive under less auspicious circumstances I do not know.

The grass I now allude to is a variety (?) of the *Arrhenatherum Avenaceum*, or wild oat grass. It makes its appearance in November, growing in great luxuriance through the winter, and attaining the height of two or more feet in the latter part of March and April. It comes to maturity in May, ripening a grain similar to the oat, but smaller, which is nutritious food for all kinds of herbiverous animals. Never having offered it to poultry I have no experience, but horses and cattle devour it greedily, and desired no better food during the winter months, it growing a luxuriant pasturage until the latter part of May, when it is superseded by the summer grasses. As a winter pasturage on Sampson's Island, I have never seen anything to compare with it, but whether it will grow on other situations not as well adapted to it, remains to be seen. By application to Mr. Wm. Ravenel, who purchased the place this winter, he, no doubt, will take pleasure in furnishing a sufficient amount of seed, of which any amount can be gathered at this season of the year (that is May) to have the experiment tried by some exterprising planter, who desires to raise stock, a winter pasture being a great desideratum to any one who desires to turn his attention to that business.

DR. F. T. CAPERS.

May, 1871.

WHAT IS IT?

Editor of The Rural Carolinian:

Of course editors don't know everything, but they ought to know all about the noxious weeds of agriculture; and hence, I send you the enclosed, and beg you will tell me what it is, botanically and practically, that I may know whether to cultivate or destroy it?

In 1866, I received from the extreme North a few bushels of wheat; amongst the growing wheat came up this grain. Riding through the patch my horse would go out of the way to nip it; I therefore culled a pocket full of it, and drilled it in my yard. It made a beautiful fall and winter growth and ripened about the time of wheat; but fearing it might be a pest I destroyed it. To-day I happened across a bunch and from it send you this head.

It is not what is known as "cheat" in this section, for this latter bears seed closely clinging to the stem. It may be "chess," for that is said to resemble oats, and this head you will observe, is more like oats than wheat.

I do not think this should be classed "noxious," for it will thrive during our winters, furnish a fine pasture for sheep, and be eaten greedily when ripe by both cattle and horses. Then why should it not be cultivated and utilized? FARMER.

This is the second specimen of this grass we have received within the week, but in neither case was anything sent but the head. "Farmer" should have sent the leaf or blade also. The *panicle* before us seems to be that of *chess*, (*Bromus secalinus*,) which is certainly a pest in the wheat field. It was somewhat cultivated some years ago, at the North, (under another name,) but failed to establish for itself a claim to be considered a useful plant. It may, however, be made useful here; "Farmer" can at least *try it*. The grass referred to by our correspondent, as *cheat*, is, we presume, upright chess. (*B. racemosus.*)

THE SUN MOTOR.

Editor of The Rural Carolinian:

The increasing frequency of allusions to Ericsson's "Sun Motor," or Solar Engine, reminds me once again that I must put forth my claim to be considered one of the originators of the idea, or be barred by the statute of limitations, which, in every field of effort, threatens the indifferent or indolent.

While seated in the library of the English Patent Office, in London in 1866, reading the experiments of Buffon and others, with large lenses and mirrors, I was struck with the immense seeming disproportion between the amount of heat manifested, and the number of mirrors employed—three plane mirrors sufficing to ignite green wood in April, if applied a sufficient length of time—an effect due to accumulation. It flashed upon me at once that a system of plane mirrors, mounted in a suitable frame, might be actuated by automatic mechanism so as to follow the apparent movement of the sun, and thus concentrate the heat upon an engine boiler, salt evaporator or other apparatus. The foggy atmosphere of London was not the field for the appreciation of such an invention, and on communicating my idea to a friend—G. W. Bacon, Publisher, Paternoster Row—I was greeted with a hearty laugh.

I went so far, however, as to make drawings and specifications for caveat here, and took the requisite oath before the American consul. These drawings and papers I sent to the *American Artizan* while that paper was publishing Mr. Ericsson's elaborate papers, but they refused to publish on the plea of expense. I then sent them to the *Scientific American*, but the papers, certificate, etc., were lost, and they subsequently refused to publish a statement like the above. I did not prosecute my caveat because of other preoccupations. The sun motor is a part of scientific history, and the public have a right to know all about it. JOHN PRATT.

Centre, Ala., March 2d, 1871.

THE ROYAL JAVA FOWL.

Editor of The Rural Carolinian:

For the benefit of the "Young Stock Breeder" and other correspondents, who inquire of you "What is the best breed of fowls for the South?" I would say that I have succeeded in getting a fowl that I like better than any I have ever tried. It is the Royal Java, which has a large thick set body, with short legs and tail, very much resembling the Cochin China in shape. In color they are a coal black, which is a great advantage in a warm climate in either animals or birds. Under good treatment the cocks will weigh twelve pounds and the hens eight, when full grown. They are excellent layers; my hen laid twenty-seven eggs before trying to sit. The eggs are large, and of a rich brown color. They are a good fowl to cross with the common fowl, or improved breeds of any kind.

I have some degenerate Cochin hens, that have been "bred in" until the breed has nearly run out. I have been trying to reclaim their size and qualities by crossing them with the Java's, with good success; the chicks are fine robust fellows, with every appearance of making large fowls.

I also have some Sicilys, they are a small fowl, remarkable principally for their laying qualities and their combs and gills, the former of which is very large, and shaped

ike a goat's horns, and the latter very long. They are said to lay almost constantly, and never offer to sit until they are three years old. Mine have done well so far. I have no chicks or eggs to spare, but hope to have next year. I got mine from a gentleman who moved out here from the North. I do not know where they can be procured, but some one who knows may give those interested the benefit of it. J. M. A.

Wekiva, Orange Co., Fla.

WHAT SALIVATED THE MULES?

Editor of The Rural Carolinian:

On Monday, the 29th of May last, I cut a few acres of clover. That afternoon the cut clover was raked up in the windrows and left for the night. The next three days were incessantly rainy. On Friday following I "teddered" the hay, and that afternoon hauled in a few loads. One load seeming quite green or uncured, and warm though scattered, was taken immediately from the field to my mules racks. I was cutting oats at the time and the mules were idle. Hence, this "feed" of clover was made to serve as a "feed" of both corn and fodder. On Saturday and Sunday following, the mules were fed three times a day on sheaf-oats, heavy, ripe and sweet. Saturday morning my mules began to run water at the mouth as if salivated, and by Monday morning, I think, without exaggeration, each mule had slobbered five gallons. By Tuesday morning following, each looked gaunted and "gutted," as if they had been hard worked and badly fed. Such was not the case however. Then what caused their impoverished look? Will wet half-cured clover of the first cutting salivate mules? Can it be that the scattering Lespideza, that pest of the South, caused this injury to my mules? Lespideza was amongst my clover.

SMALL GRAIN.

"A HOLE IN THE POCKET."

Editor of The Rural Carolinian:

In old times when everybody had plenty, when taxes were light and officials honest and unambitious, a hole in the pocket was a small affair and not noticed, but times have changed, and we must adapt ourselves to circumstances. We must strive to stop the leaks and save all we can, or we will most certainly go down rapidly. We have heard a great many complaints this year about the small quantity of seed put up by seed dealers in their retail packages, and also about imperfect seed. We bought at a seed store on King street, Charleston, flower seeds for which we paid twenty-five cents a paper, and not a seed vegetated, while seed given to us by a private gardener in the city came up readily.

We have seen papers of squash, okra, and other seeds, that did not contain seed enough to plant more than a dozen hills.

We bought a paper of Buist's early squash and bunch okra, neither of which contained seed enough to plant more than a dozen hills, and the same may be said of nearly all the seedsmen. Now it is simply disreputable and thriftless, for a people having the finest climate in the world and the best soil, to send North for their garden seed. Millions of dollars are annually sent North for garden and flower seeds, which could just as easily be produced at home, furnishing safe investment and profitable employment to many who are not able to do heavy work. Is there no hope of stopping this hole in our pocket?

***.

THE CHICKEN CHOLERA.

Editor of the Rural Carolinian.

The terrible pestilence which has prevailed so extensively among the Poultry throughout the country, commonly called chicken cholera, has been among my fowls, turkeys, Guinea fowls, etc.

After loosing more than half of my stock, I have at last discovered a remedy for this malady.

As soon as a case of this disease is discovered, give half a teaspoonful of a solution of carbolic acid, made by adding five drops of the acid to two ounces of water. Also, if the fowl is unable or not inclined to eat, it must have grist moistened with the above mentioned solution put down its throat two or three times a day until it will eat of itself. The poultry should all be kept in the poultry yard most of the day, and should be supplied with water slightly flavored with carbolic acid. The sick should be separated from the others, and this treatment continued until they become lively. Under the use of this medicinal agent, the crop which, on raising the feathers, shows a green color, gradually recovers its natural appearance.

This disease seems to be caused by a putrefactive fermentation in the contents of the crop, which after a while produces choleraic symptoms such as violent purging, collapse and death.

The case must be very far gone that is not relieved by CARBOLIC ACID.

May 22d, 1871.

FENCE LAWS.

Editor of The Rural Carolinian:

To change the law in regard to fences in all parts of the State cannot be accomplished, and would not be right if it could be.

No uniform fence law throughout the State can operate justly.

The present law is very well adapted to the pine and sand country, and also to the mountain country, but ruinous to the middle country.

Farms ought to be enclosed, where much the larger portion of the land is not fit for cultivation. But, in the middle country, where four-fifths of the land has been, and will again be brought into cultivation, either for farming or grazing, the law should require every one to keep his stock from trespassing, and allow every one, rich and poor, to take up, and under the assessment of a magistrate, to hold the stock responsible for damages.

There is no difficulty in the way of making laws to apply to certain localities, or exempting certain districts of country, or certain counties or townships—no matter about the boundaries—from the operations of a general law, if the people of that locality who are mainly interested, desire it.

For example: On the Pacific coast, there are three distinct land interests—the farming, the grazing and the mining interests.

The same law, it was soon discovered, would cripple the energies of the people and hinder the development of the resources of the State. The legislature thereupon was wise enough to meet those difficulties promptly and to enact laws for certain counties, or to exempt certain counties from the operation of general laws.

Just that little common sense is needed here now, and if there is a county in the middle country so fortunate as to have a member representing the intelligence of the county in the legislature, there can be no obstacle in the way of passing a law in regard to fences, that will relieve the people, black and white, equally, from thousands of dollars annual expenses for building and repairing fences—to say nothing of the comfort of living in a community where every man must take care of his own stock, and not vex and harrass his neighbor day and night, or force him to shoot to protect his property.

Long River, S. C. N. H. Davis.

ONION CULTURE

Editor of The Rural Carolinian:

In your May number you ask for the result of experiments in the culture of onions in the South.

Just before the war I owned a farm a few miles above this city, and in the spring of 1860 planted a half bushel onion buttons, for which I paid $1 50. When the onions were gathered and sold, I received a twenty dollar gold piece for the lot. J.

Charleston, S. C.

NOTES ON THE RAIN FALL.

Editor of the Rural Carolinian:

In your June number I find a statement of the fall of water for 1868, 1869 and 1870, as also for March, 1871, which was 4,385 in Athens, Geo.

By referring to my record for several years, I find we had:

For the Year.	March Apl. and May.
1862.....32.91	12.74
1863.....50.96	11.55
1864.....44.86	8.35
1865.....Imperfect.	Imperfect.
1866..... "	18.26
1867.....29.11	13.58
1868.....45.58	14.
1869.....40.6	12.70
1870.....41.3	10.30
1871.....	20.44
Average 44.60	Average 13.54

January, 1871..... 6.49
February, 1871 ..... 2.95
Since January to June 1st.....29.88
Since June 1st..... 3.25
January to June, 1862.....24.21
" " 1863.....31.44
" " 1864.....17.48
" " 1867.....16.21
" " 1868.....22.65
" " 1869.....21.72
" " 1870.....18.65
" " 1871 .....29.88
Avg. 8 ys. 22.78.

The greatest quantity you will see was in 1863, 50.96-100 inches, and for the five months 31.44. In June that year, we had 9.2-100 inches. This month to date, (6th,) we have 3.25-100 up to 8 o'clock, A. M., and raining steady now. From present prospects this year will beat 1863. There was a tremendous fall of rain seven miles west of here at three this morning, the like of which, my informant says, he has not seen in thirty years.

R. S. Norton.

Rome, Ga., June 6th, 1871.

INQUIRIES AND ANSWERS.

W. A. M., Barnwell, S. C., inquires in regard to "the best and most practical manner of carrying on a dairy farm of ten head of milch cows; what amount of feed it would take to keep them, and of what sort; with an estimate of entire cost and profits, and the number of hands and mules it would require to make the grain and forage necessary." We have not the necessary data on which to base a definite reply to these really important questions, and we fear there are few persons in the South who are able to give, from experience, the exact figures; but we are glad to have the questions put, and doubly glad to be able to inform our correspondent and others interested—and "their name is legion"—that we have on file, for publication in our next, an article on "Dairy-

ing," from the pen of a gentleman of Mississippi, who has had an experience of more than thirty-five years in the business, and who deals in facts and figures drawn from his own practice.

——E. J. C. wishes instructions for the propagation and cultivation of the camellia in the South. We shall be glad to publish a brief article on the subject from some one who has the necessary experience.

——The Northern paper referred to by F. M. is good authority in Northern farming and horticulture, but when it attempts to instruct its Southern readers in regard to modes of working in this climate it is not a matter for wonder that its advice is often worse than useless.

——*Alfalfa* is merely the Spanish name of lucerne. It is a valuable forage plant, and M. S. M. could, no doubt, grow it to advantage in Florida, if he has good hammock land, or can manure heavily. See February number, p. 311, for brief instructions.

——J. M. McC. We are not able to tell you the name of the grape from the single leaf sent, which, however, resembles that of the Concord.

——F. H. K. is troubled with red ants, which build their mounds in her flower garden, and wishes to know how to drive them away. Will Mr. Dodge please answer? In the mean time see "Farm and Garden Notes," page 600.

——W. A. & Co. desire to know how a brick dam should be constructed. Perhaps our valued contributor, Mr. Alex. Y. Lee, will be kind enough to give the desired information.

LITERARY AND HOME DEPARTMENT.

BONNY HANDS.

I own the charms of rounded arms,
Of eyes that love's soft lustre shed,
Of raven hair, and tresses fair,
Of cheeks that toy with white and red;
Of pouting lips where Cupid dips
The arrows that to hearts are sped;
Yet none of these my fancy please
Like the bonny hands that make good bread.

Some hands have art to move the heart,
By waking music's sweet appeal;
Some borrow dyes from perfect skies,
And, through the canvas, make us feel;
Some make the dress fair forms caress,
To win the heart and turn the head;
For me, more rare beyond compare,
Are the bonny hands that make good bread.

Gay maiden, vain the rustling train,
Those jewelled hands so idly crossed,
That idler mind can pleasure find
In every hour ignobly lost!
Your jewels shine, your looks are fine,
But I'll not seek, whene'er I wed,
For jewelled bands or gold and lands;
But for bonny hands that make good bread.

JOHN S. AITCHESON.

ROSES AND THEIR ENEMIES.

Hardly have their soft, crimson-tufted buds unrolled than the ravage begins. You bend lovingly over your pet "Giant of Battles" or "General Jacques Moneau," and start aghast. Why are the leaves twisted thus strangely over the coming buds, and cemented together as by a wiry glue? The experienced know well the cause, and applying a finger and thumb artistically, give a pinch. Aha! a black and green head wriggles into view. He is there, "Thalaba the Destroyer," that slug whom, in defiance of Mr. Warner, we pronounce the "saddest" of the year.

Talk of promptitude—he is always *before* time. Early bird must it be, indeed, who picks up that worm! Before human vision detects the delicate unfolding bud, he has gorged himself with essence of bloom, and the bud is an empty shell. We pinch and pinch with stern determination, regardless of cold chills down our spines—and still the creeping creature defies us, and the harvest of beauty is snatched from our grasp.

Is there then no remedy? Yes. Let others prate of tobacco washes and whale-oil soap. *Our* spell is couched in two magic words. They are—"White Hellebore."

This blessed dust—worth its weight in gold—may be had at moderate price at any chemist's. Salute it. It is not the rose—but it comes near to being so, for it saves the rose.

Dissolved in water (proportion, a half-pound to a half-barrel) and applied with a syringe, it coats each leaf with a faint gray sediment. Over this, while wet, a little dry powder should be dredged. The slug, taking, as is his wont, an early constitutional on top of the leaves, absorbs this refreshing aliment, and is found at 9 P. M. swollen, black, and dead as Pharaoh. Very early risers may even enjoy the delight of applying the dose

directly to the spine of the invader, and watching the effect!

A few days—and our heel is on the neck of the enemy. And then, ah! then how the fresh leaves laugh and twinkle! how the cups of cream and fire and snow unfold, and with what wafts of sweetness do they recompense the hand that brought deliverance! Conquerors and conquered, we bow before the spell of beauty, and inscribe upon our oriflammes—("which," as the Bab Ballad remarks, "is pretty, though I don't know what it means") the name of the herb which tempted fair Juliet to her death, but to our rescued favorites has been a word of healing.

Remember: *White Hellebore.—Scribner's Monthly.*

WOMAN-SLAUGHTER.

Mary Wager says she knows a man who prayed night and morning, preached on Sundays, and was a rich farmer beside. His wife milked the cows in all sorts of weather, cut most of the wood, built the fires, churned, economized, and died of consumption. He put a weed on his hat, tried to resign himself to the "dispensation of Providence," when he ought to have been tried for woman-slaughter in the first degree and sentenced to chop wood and milk cows in the rain all the rest of his life. She wants debating clubs to discuss whether it will go harder with him or with Jim Bludso, in the day of judgment.

TASTE AND THRIFT ARE SISTERS.

I have noticed, a distinguished clergymen says, during a ministry that has extended through half of my life time, and chiefly among the poor, that those people in the humbler walks of life, whose natural promptings have led them to whitewash their cottages, and train the jessamine and morning-glory by the door, or plant the marigold in the yard during the summer, are not *generally* the persons to whom my deacons have had to carry coal and potatoes in winter.

TO KEEP BOQUETS FRESH.

If our lady readers wish to keep a boquet fresh, let them drop a teaspoonful of powdered charcoal into the water intended for the flower stalks, and they will keep their freshness and perfume for several days, and look and smell the same as those just gathered. The charcoal settles to the bottom of the vase, the water remaining clear.

ANSWERS TO CORRESPONDENTS.

A correspondent asks us what we think of late ploughing. Ploughing should not be continued later than ten or eleven o'clock at night. It gets the horse in the habit of staying out late, and unduly exposes the plough. We have known ploughs to acquire springhalt and inflammatory rheumatism from late ploughing. Don't do it.

To another correspondent, who wants us to suggest a good drain on a farm, we would say a heavy mortgage at ten per cent. will drain it about as rapidly as anything we know of.

THE SABBATH.

The Sabbath is for man's own use,
His business *then* is rest,
By leaning, in sweet peacefulness,
Upon his Saviour's breast.

And now the Church, for whom he died,
And hath, by dying, sanctified,
Would have the day whereon He woke
Kept free from labor's yoke.

SIGNS AND TOKENS.

The Gridiron.—To take down the gridiron from the nail where it is hanging, with the left hand, is a sign that there will be a broil in the kitchen.

The Mirror.—If a mirror is broken it is a sign that a good-looking-lass will be missed in that house.

A Funeral.—To meet a funeral procession is a sign of a death.

Pocket Book.—To lose a pocket book containing greenbacks is unlucky.

Nails.—If a woman cuts her nails every Monday it is lucky—for her husband.

Roosters.—If you hear a rooster crow when you are in bed, and the clock strikes a few times at the same instant, it is a sign of mo(u)rning.

An itching ear.—If you have an itching ear, tickle your nose and you will have an itching there, and ill luck will be averted.

THE HABITS OF CLIMBERS.

Perhaps my reader has seen a hopvine, climbing up a pole, twining around it in "loving kindness." Perhaps he may have seen a whole field of hopvines thus climbing up into the air and sunshine. Which way do they wind around the pole? And does every hopvine wind the same way? Why should they not wind promiscuously, sometimes turning one way, and sometimes the other, as it happens? How do they know which way they should turn in climbing? And has the reader seen a bean climbing up a pole?—and can he tell us which way around the pole it turns? Is it the same way as the hop? Why does the hop turn one way and the bean the other? What causes the difference? And does every bean turn the same way? And the morning-glory, does it agree with the hop, or the bean? And is it always uniform like them? Is there any

twining plant which climbs up by turning promiscuously, sometimes one way, and sometimes the other? Beans have eyes, and perhaps may see the way they ought to go; but how about the hop? Who teaches it the way its forefathers trod ever since the day of creation? It has never seen its predecessors; they perished the season before its birth. And why does the morning-glory open its eyes in the early morn, yet close them in slumber long before night? Who will crack these nuts and give us the kernel of the knowledge they contain?—*Journal of Agriculture.*

THE COLORS OF FLOWERS.

Remarkable changes take place in the color of some flowers during the course of the day. Those of the Pink Phlox, early in the morning are of a lightish blue, which alters as the day advances, and becomes a bright pink. The *Œnothera tetraflora* has white flowers, which change to red. The *Hibiscus variabillis* has its flowers white in the morning, pink at noon, and at sunset bright red. Many flowers of the *Boraginaceæ* are red before expansion, and afterward blue. The bracts of *Hakea Victoria* are yellowish white at the centre the first year; the second year these become of a rich golden yellow; the third year rich orange; the fourth year blood red, and the green parts of the bracts become annually darker. Hydrangea changes its color between a blue and pink. The Dahlia, of the yellow species, has been made to produce all varieties of that series, but has never been produced of a green color.—*Artisan.*

PASSING.

The sun-motes glint across the eaves,
The light dust flickers on the leaves,
Calm is the sea, the Heaven blue,
The roses blush the trellis through.

The barley-beards grow full and white,
Day lingers into hours of night,
The babbling brook is low and still,
And scarce can feed the toiling mill.

The Summer glow is in the air,
The hay-fields yield an incense rare,
On the green earth, in sky above,
A halo gleams of life and love.

O happy days, O Summer time,
O dreaming youth, in golden prime:
All that is bright, and pure, and sweet,
Shines when ye twain together meet!

'Tis so, and so 'twill ever be,
Youth plucks the blossom from the tree;
That which it sows, long years give root,
But only few may taste the fruit.

And we who passed long since our prime
And bear the wrinkled stamp of time,
Look on and smile, look on and sigh,
Lock in our breasts the reason why.

[*All the Year Round.*

RECIPES.

For Cooking Oysters.—*To Stew Oysters.* Fry three or four slices of nice ham. When done, take up the ham, but leave the gravy in the pan. Put in one gallon of oysters, and cook three minutes. Season to your taste. Cut slices of light bread or biscuit, and put it in your dishes, pour on the oysters, and serve hot.

To Fry Oysters.—Make one pint of flour into a thin batter. Put in half gallon oysters, stir well together, and season with salt and pepper if you like. Have ready your pan with hot lard; put them in one by one, and fry brown.

Oyster Pie.—Make a rich paste crust, and place it in your baking tin. Fill up with oysters, and add a little butter, salt and pepper. Place across the top slices of crust about an inch wide, having the pieces about an inch apart. Lay other across these. Bake half an hour, and serve while hot.

Mrs. B. W. J.

To Cleanse Bedsteads.—Turn down your bedding from the headboard; take out each slat, and wash it well with strong, cold soapsuds. Wash the frame and joints of the bedstead well, and wipe the parts dry; put the slats back; stuff each crevice with a little turpentine soap; then turn back the bedding from the foot, and go through the same process. Half an hour's work once a month, requiring neither strength or skill, will save much annoyance. One quart of water and a piece of common turpentine soap an inch long will be sufficient for two bedsteads. What will keep off cockroaches? L. L.

Good Biscuits.—One quart of flour, one tablespoonful of lard, a little salt, two teaspoonsful of yeast powder; mix thoroughly with sour milk, or lukewarm water; knead half an hour, frequently tearing the dough into small pieces and mixing again; then roll up pieces about the size of a small egg; flatten; stick the top with a fork, put them on a greased tin, or immediately in a warm oven; bake quickly. L. L.

Puffs.—Biscuit dough rolled as thin as a wafer and fried briskly in hot lard, turning quickly when browned on one side; let them drip. They are served either warm or cold, for breakfast or tea. L. L.

HAW JELLY.—Mrs. L. L's. recipe is as follows: Pick the haws when quite red, wash, stem, and put them in a China-lined vessel, with water enough to let them boil well. When *perfectly soft*, mash and strain. To a pint of this juice add a pound of white sugar, boil over a slow fire until as clear as syrup, then put it into tumblers, and, when quite cold, paste white paper over the mouth to exclude air. This jelly keeps well, and is equal to Guava.

AN ANTIDOTE FOR STRYCHNINE. — G. writes, that a pint of lard poured down the throat of a dog poisoned with strychnine will certainly save him. He has tried it twice successfully.

COFFEE CUSTARD.—Mix one egg with a cup of fresh ground coffee, and pour on it a pint of boiling water; boil five minutes, pour in a cup of cold water, and let it stand ten minutes. Pour it off clear into a saucepan, add a pint of cream, and boil. Beat from five to eight eggs with one and a half cups of sugar, and pour the boiling mixture over this, stirring it well. Set the whole in boiling water, and stir till it thickens. Serve in cups to eat cold.

CURE FOR WARTS.—An exchange says: Take a piece of fresh beef, soak it in vinegar for twenty-four hours, shave it in very thin slices, and bind upon the wart, renewing the application for three or four days, when a cure will have been effected. The same application is said to cure corns.

TO REMOVE GREASE.—Grease may be removed from a coat collar by washing it with a sponge moistened with hartshorn and water.

CHICKEN CHOLERA.—*Cholera* is easily prevented by feeding a spoonful of alum, pulverized, in the soft food for chickens twice a week, during the spring and summer months. *Gapes* may be prevented by putting a small quantity of camphor, daily, in their water troughs.

PUBLISHERS' DEPARTMENT.

OUR CONTRIBUTORS.

No Agricultural paper or magazine in the country, North or South, we venture to say, can boast a more *weighty* list of contributors than THE RURAL CAROLINIAN. Other publications might, perhaps, display a longer array of names, but in practical experience, learning, talent, influence and social position, the following roll is not easily matched, and we feel an allowable pride in having so soon drawn around us such an able corps of co-laborers in the great work of promoting agricultural progress in the South. We make room at this time for only a partial list:

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Some time since the proprietors of the Charleston *Weekly News* declined clubbing any further with THE RURAL CAROLINIAN. We are thus unable to renew old or take new subscribers under the previously existing arrangement. We are still clubbing with many first-class leading Dailies and Weeklies through the South.

BACK NUMBERS FOR JANUARY AND FEBRUARY, 1871, WANTED.

Our subscription list ran up so rapidly in these months as to completely exhaust our edition. As we have still frequent calls for these numbers, we would like to secure several hundred of them.

Cannot some of our subscribers, who have read and do not wish to preserve them, help us out? To all who will send us copies of these numbers (January and February, 1871) per mail, *prepaid*, we will extend their subscription one month for each copy sent. We thus give a *new* number for an old one.

Parties must mark their names and postoffice legibly on the covers and prepay the postage.

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Charleston, S. C.

FARM AND GARDEN CALENDAR FOR JULY.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance North or South of this place must make the necessary allowances for difference in the seasons—about five days for each degree of latitude.

GARDEN WORK.

We have recommended sowing cabbage seed in May and again in June, as there is often great difficulty in getting good plants well established during the season of alternate drouths and heavy rains. We sow once more from the first to the tenth of July, and if we succeed with this sowing, we prefer for our winter crop the plants thus grown to those from the earlier sowings. Keep the seed-bed moist by frequent waterings with soap-suds or other liquid manure, not made too strong, till the plants are well established. If you have good plants from previous sowings, transplant a few, as also cauliflower and broccoli, choosing the evening or a rainy day for the operation, and shading the plants for a few days; but next month's plantings will be likely to do better.

——Of Beets, Carrots, Parsnips, etc., it is now very difficult to get a stand, but if you can protect the young plants against the hot sun and beating rains you may yet get a fine crop early in the fall.

——Snap Beans may still be planted for a succession.

——Water Melons, Squashes and Cucumbers for a late crop may be planted, and if they withstand rain and sun and survive they will give you a good late crop.

——Irish potatoes for a fall crop may be planted toward the last of this month or in August. Old potatoes are best for seed, if they can be got. If you use seed from the spring crop, select tubers that have begun to sprout, or which show signs of development in the eyes.

——In the Flower Garden, Roses may now be budded and layered. Chrysanthemums, and many other plants, may also now be propagated by layers.

——Evergreen Hedges should be trimmed, and box edgings clipped.

——Save seeds, and put away in paper bags, carefully labelled with name and date.

——Tomatoes may still be planted, using cuttings (watering and shading them) if you have no young plants.

AGRICULTURAL OPERATIONS.

Cotton must now be encourged by constant and careful, but shallow culture, to promote the production of forms and bolls. Use light sweeps and follow by the hoe.

——Corn, if not already laid by, must be kept clean till the blades meet across the rows. Cow peas may be sown broadcast at the last working, where not already planted, covering with a cultivator or harrow.

——Sweet potato draws and cuttings of vines may still be put out in this latitude, but do not delay this work, as it will soon be too late for a crop. In working the sweet potato crop, avoid covering the vines, many, we are aware, take pains to cover the vines, thinking it increases the crop, but *there can be no greater mistake.* Prevent them from taking root between the rows by lifting the vines now and then, especially after heavy rains. A pronged hoe is a good thing to do this with. See remarks in previous numbers.

——Hay is a most important and too much neglected crop. Make all you can, and prepare to make more next year, by getting some suitable land into grass. Cow peas may be sown broadcast, as a separate crop, for hay. From a bushel to a bushel and a half per acre will be a sufficient seeding.

——Draining and ditching may be done to advantage now if you have any time and hands that can be devoted to it, without neglecting the crops.

——Turnips should be largely planted. Prepare the land thoroughly and manure heavily, and you may make your first sowing about the last of this month; and, if it fail, you can try again in ten days, and so on, till a stand is obtained; but August and September are generally better months for sowing the main crop.

Late Admirable Peach.

THE

RURAL CAROLINIAN.

Vol. II.] AUGUST, 1871. [No. XI.

Timely Hints on Small Grain.

The corn crop of the cotton belt, soon to be harvested, will this year, no doubt, prove sufficiently abundant to supply the wants of the cotton planters, in this respect at least, until a small grain crop can be grown, for a larger area has been reported as planted throughout the South, and the summer has been generally favorable to the maturity of the crop; but if the cotton planters desire to be independent of the corn market, they must not wait for another spring and summer through which to "gee and haw" amongst the corn rows, but begin now, this month, to fortify themselves against any possible contingency of failure.

Where corn pays best, by all means plant it; but it is difficult to find any such spots on the uplands of the older Southern States. Where upland will not produce fifteen bushels of corn per acre, and is not favorable to cotton, I substitute peas, or that most profitable, but most unpopular crop—sorghum. A pea crop, ploughed under, will almost double the crop of wheat on red land. Sorghum being an early fall crop, furnishes an early pasture and clean land upon which to sow any kind of small grain.

Ordinary upland should be cultivated in cotton, to be followed by oats, because with half the labor more food can be harvested from an oat crop than a corn crop; but, to sow oats in cotton land, the planter should not wait until he can plough up his frost-bitten stalks, as is the usual custom, but begin now, or early in September, to sow as I will presently describe.

The error heretofore has been, that not sufficient time is allowed between seed time and harvest in small grain crops. Many planters sow wheat in December and oats in February, anticipating as abundant a yield as if they had sown in early fall. Experience proves this to be an error. The harvest will neither be as abundant nor as early. Red spring wheat sown in December will not ripen till June. I have sown it in October and cut it before the 10th of May. Red oats sown in September will ripen early in May, and be several pounds to the bushel heavier than the same oats sown in December or February. This fact attaches to all small grain, and it is questionable what time would be too soon to sow if the planter could be assured of a wet fall.

No agricultural experiment since the war has been so valuable to the cotton planter as that which induced the sowing of small grain in cotton land early in the fall; and I know of no one who more justly deserves the credit of this experiment than Dr. W. L. Anderson, of Abbeville County. I have known him to average over thirty bushels per acre in his entire crop, and seventy bushels per acre on a small area. His method is simply to pick over the cotton at its first opening, and immediately "side" it with a blunt scooter, sow the seed and run a horse hoe or narrow harrow through the middles. A similar method was described in the February number of THE RURAL CAROLINIAN, where all was said that need be said of those invaluable red oats.

Last fall I sowed five bushels of barley on five acres of fresh land, then standing in cotton. Two furrows with fourteen inch sweeps were run in the middles, and a beautiful stand secured, in two drills, one each side the row of cotton stalks. By the 1st of April following, the barley had stooled out sufficiently to cover the ground like a green carpet. Either of these grains might be sown at the last ploughing of cotton if done any time in August. A crop would then be grown simply for the sowing as the ploughing is necessary for the cotton. I once sowed a patch of barley early in August, and it was killed by the hot sun after it came up. This would not be the case in cotton land, as the soil would be in fine tilth, and well shaded by the cotton stalks.

Tramping over the young oats, or other small grain, while picking cotton seems to benefit rather than injure it. The loose earth is pressed about its roots, and where the leaves are broken a more vigorous growth of one or more shoots is the consequence. The following March the cotton stalks must be broken down to enable the reapers to cradle the grain. The inventive genius of our country has an opportunity here of adding to the list of improved implements. We need something, that being drawn by horses, will first knock off the limbs and then cut off the stalks, so that a reaper can harvest the grain.

WHEAT.

Red wheat is a hardier grain than white wheat; and both kinds are so liable to disaster, that my experience questions the economy of sowing this grain for market in a cotton growing country. I succeed better by *harrowing* wheat into well broken land, than by *ploughing* it into the same land. A very few acres of red land manured well with cotton seed, (fifty bushels per acre,) and sown in red spring wheat in October, will almost always yield more than an annual supply of flour for the largest family.

RYE,

if sown in September, makes the best possible winter pasturage, and will reproduce its seed even if grazed till 1st April.

BARLEY

requires stronger land to become remunerative than any other grain, and no where will it produce so heavily as on a lot cowpened or sheep hurdled. I

think the great mistake made by most planters is in sowing barley too thick, when they grow it for its grain. One bushel to the acre will often make more bushels of seed than two, but two will give better soiling than one. During the past spring, I cut a lot of barley over twice between 1st February and 1st May, and then harvested a fine crop of seed. Heavy manuring and a wet spring, will enable any one to do this. Every owner of a plough animal should sow a barley patch.

OATS.

I have experimented largely with oats, the most valuable forage crop that can possibly be sown by a cotton planter.

The celebrated Norways are prolific, and nothing more can be said for them. They are light and chaffy, shake out and waste when being reaped, will not stand the winter successfully, have too large a stem and will rust.

The Excelsior, Brunswick, Surprise and Scotch oats, are identical in weight, color, appearance and growth, and are a spring oat not surviving our sudden snaps of cold weather, and all liable to rust. The Excelsior were imported from England by the Patent Office, and those samples with which I experimented brought with them cheat, cockle, chess and tares, or an undescribed weed.

The Schouen oat is another pretty white oat from the Patent Office, that proved with me prolific, but had rust on its blades, not on the stem.

All spring oats seem to be liable to rust, and doubtless will, for this cause, be abandoned, as was the old-fashioned white or yellow spring oat. The red oat, called red rust proof, Mexican rust proof, etc., is invaluable, and only needs length of season, and ordinarily fertile land, to yield all the sower could possibly expect. The richest land does not produce the best oats. When threshed they should be fed to stock by measurement, and the straw housed as carefully as corn fodder, for it is equally valuable as forage.

D. WYATT AIKEN.

Land or Labor.

In England and other countries where land is high, the great question for the agriculturalist to solve is, how much can be made from a given area? For with an investment of several hundred dollars per acre, he sinks money, unless he makes enough to pay for labor, land tax, and the interest on the investment. Hence the expensive systems of agriculture, such as subsoiling, trenching, high manuring, etc. Salts that have filtered down for ages must be brought back to the surface, the deepest possible tilth must be given to admit air, by which chemical forces are brought to bear on insoluble substances, and the roots themselves allowed to penetrate and get nutrition from great depths.

In this country, however, where land is so cheap, a man cannot afford to spend so much money on one acre. The question is how much can be raised to the hand, or rather this was the question in *ante bellum* times; but now,

under the tenant system, it is changed to how much can we make to the mule. For as the negroes furnish the labor, it is only necessary that the landlord sees to it, that they make enough to pay for money advanced them for necessary expenses. Beyond this he is not now, as heretofore, interested in the products of their labor.

The average of good one-horse ploughing in this country, is about four inches deep; good subsoiling eight. It is admitted that the four inches of subsoiling will cost more than the four of surface ploughing. If one mule can plough an acre in a day four inches deep, it will take three mules to subsoil it eight inches deep. Three mules can cultivate what four can prepare under the old system; so it will actually take twelve mules to subsoil and prepare as much land as three can cultivate. This mule power is needed immediately after Christmas, and from that to planting time. After this there will be nine mules resting, if a man undertakes to subsoil all he plants; while under the one-horse system, there will be but three which is allowable after the hard spring ploughing.

Under this view of the subject, a farm well subsoiled with twelve mules, and highly cultivated in every particular, will consist of about ninety acres, allowing thirty acres to each of the three mules for cultivation. While the other farm will consist of two hundred and seventy acres, being thirty for each mule. It will take more hands, of course, to cultivate the two hundred and seventy acres and gather the products; but, as we before stated, this is not a question of the landlord as to profits. The more made per acre, the better profits to the hands, as they can cultivate more, but the more per mule the better for the landlord.

The question then arises whether the ninety acres subsoiled and better cultivated, will make more than the other not so well prepared, and more carelessly cultivated; of course in this calculation, the small subsoiled farm must be credited with the surplus tax and interest of the large farm, as well as the greater improvement, in its preservation from washing, and with whatever extra hauling, manuring, etc., the nine idle mules can do, above what the three can do on the other farm. With all this, however, it is not reasonable to suppose, that ninety acres thus cultivated, could produce as much as two hundred and seventy well cultivated, under the old system. Of a seasonable year in corn or cotton, one would produce about as much as the other, so far as the effects of subsoiling is concerned. Allowing of a dry year that the first farm would average twelve bushels of corn to the acre, the others would have to make thirty-six, and half a bale of cotton, for the first would bring the second to a bale and a half. A most unreasonable average for land brought to the highest state of cultivation.

The question then recurs, can we, in this country, afford to adopt a better and more expensive system of cultivation, than the best now in vogue, subsoil all our lands, cultivate less and make more to a given area. By the aid of fertilizers it is clear that we can keep up a four-inch surface to a high state

of cultivation without wearing it out as heretofore, and seeking new lands. Is it cheaper to apply these fertilizers made soluble by art, or bring up from the subsoil below by trenching, (as in Europe) the salts that have filtered down, and wait for the slow processes of aeration, and solution by vegetable acids to make a permanent improvement of the soil?

These are vital questions; and after all that has been said by way of ridiculing the loose and wasteful modes of Southern farming, we are not yet apprised, that with the negro and the mule, and our cheap lands, any of the most approved methods which look to the greatest amount from the land, and the largest profits without regard to the labor spent upon it, has produced better or even equal results.

Sparta, Ga., June 10th, 1871. E. M. PENDLETON.

Disadvantages vs. Advantages.

It has occurred to me while reading so much about the *ad*vantages of the South, that if some competent person would draw up a list of the *dis*advantages too, that many immigrants would be better informed, and therefore better prepared for living among us; while at the same time none would thereby be detered from coming. Any *prudent* man in changing his locality would be sure to ascertain, if possible, both the advantages and disadvantages of his prospective home and compare them with those of his present one. I do not remember ever to have seen a single article in any paper detailing the *dis*advantages of the South, while her *ad*vantages (which are truly great) have been trumpeted over the world. Would it not be a simple act of justice to those who contemplate coming here for us to state candidly our disadvantages too? Leaving it to others, more able, to perform the task in a complete way, I will here state some of the hindrances of Southern life:

First, Our country roads are, with few exceptions, in so rough and neglected a condition that travelling upon them is very unpleasant, sometimes dangerous. Of course this is an evil that can be, and will be, easily removed. Second, Much of the old settled lands are poor and unproductive. But these sell cheap; and materials are within reach of the intelligent farmer to restore their lost fertility. Third, In some sections, building timber has become scarce. Fourth, There are yet few public schools, or public libraries; and postoffices and churches are commonly far apart. These will all be supplied as wealth and population increase. Fifth, Injurious insects, and flies, mosquitoes and ticks, snakes and reptiles are more abundant than in more northern latitudes. Sixth, Chills and malignant fevers prevail to a greater or less extent along the seaboard and tide water river courses, but they are mostly of a mild type; and one need not settle in such localities. Perhaps when our marshes and great swamps—such as the Dismal, in Virginia, and the Okifinokee, in Georgia, and others—are drained and cultivated, *as they can and should be*, fever and chills will be entirely unknown here. Seventh, In some sections ignorance, prejudice, and superstition among the

masses prevail to a deplorable extent. This is to be regretted. But the light of a better day has dawned. These dark clouds upon our moral horizon will disappear as intelligence advances. It is to be hoped that such as come among us from abroad will not add to this moral darkness. Eighth, Thieving among the blacks is becoming more and more common as vanish their visionary dreams of "substantial aid" from Uncle Sam. Ninth, There is a spirit of apathy and indifference on the part of a certain class of whites that is detrimental to the development of the material interests of the country. This class is falling into the back ground before the manly tread of our noble army of workers and thinkers. It is mainly composed of gamesters, idlers, and those who think that wealth exempts them from all labor for the common weal.

These are some of the drawbacks that immigration would be likely to meet with. It is believed that most of the worst have been mentioned. Is it not a matter of gratulation that so few can be found? And is not this fact a recommendation, *a proof* that our *advantages* surpass those of *any other* clime or country?

Cottage Home, Surry, Va. B. W. JONES.

Brazil Nuts and Rio Coffee.

Coffee Plant and Leaf.

The rainy season, which is here called winter, is now nearly over, and spring has commenced; not as it would begin in the temperate zone, with swelling buds, and the peeping out of snow-drops and violets, but with the maturing of crops, such as rice, corn, pumpkins, sugar-cane, etc.

This is the time to plant cotton, there being just rain enough to make it mature. The bolls open when there is no rain, hence no loss incident to wet weather in cotton-picking time. Peas, also, are now planted, for, planted sooner, they will grow finely and bear, but will rot before they are quite dry. We only plant in January to supply the family with sufficient to use green.

The falling of *Castaniahs* (Brazil nuts) is during the rains, and now is over. The harvest has been very large. The gathering of them is attended with much danger. We have heard of two natives being killed this season, one receiving a blow on the top of the head while standing, the other on the back of the neck while stooping. The trees grow immensely high and large, the foliage

is dark glossy green, large and slightly crimped. The tree blooms at the beginning of the rains, hence has the fruit of last year and blossoms for a new crop at the same time. The flowers are fragrant, and grow on a stem standing erect; the fruit grows like the blossoms, till over half grown, when their increasing weight makes them gradually assume a hanging position. The outer shell is round, dark brown, and from three to six inches in diameter. Each shell contains from seventeen to twenty-five nuts. The bark of the tree has the appearance of hickory bark, and the inner bark is used to calk vessels, boats, etc. It is taken off the tree in pieces about two feet wide and four feet long, and is three-quarters or half an inch thick, and is prepared by beating it with a stick, washing out the sap, and drying in the sun. The fibre is soft and fine. The nuts, when ready for exportation, as bought from the Indians, cost from four to six *milreis* ($2 to $3) per *alqueria* (more than one bushel). There are other nuts of the same family, two of which are known to me. One kind is much smaller than the sort described, called *Castaniah de Macaco* (Monkey Nuts). The third kind is much larger, and is called *Castaniah Sapokiah*. There is a round hole in each, with a cover sealing it close; when the nuts are mature the cover drops off and the nuts fall out. They are much more sought after than the other kinds. The nuts are soft, wrinkled, and quite large. They are scarce, from the fact that rabbits, rats, wild hogs, etc., consume them as soon as they drop.

Coffee is now being harvested, and the trees that a few months ago were white with blooms, and filled the air with fragrance, are now bending down with bright red berries, each of which contains two grains of coffee. The tree, when kept in proper condition, is trimmed so that the fruit can be gathered while standing on the ground. Each season the new wood only gives fruit. The fruit-bearing branches are less in size than Faber's lead pencils, and about fourteen to twenty inches long, with a leaf coming out on each side every two or two and a half inches. At the axil or angle of leaf and stem, the fruit appears surrounding the stem, and presenting the appearance of a bush well known to the boys of South Carolina as Mocking Bird Bush. These berries are purple, and have an aromatic taste. The substance surrounding the coffee is quite sweet, and has no taste of coffee. The berries are pounded in a mortar, pouring water on the mass, washing and separating the coffee from the skins of the berries, then drying the coffee. There is a skin or inner covering on the coffee, which can be removed by pounding when dry. The people of the country prefer it with the skin on, and it is sold when quite new and green at the same rate. The old Rio coffee can be bought for $12 to $13 per one hundred pounds. The water in which the berries are washed after being pounded, if fermented and distilled, will make a fine quality of brandy. Many, however, object to this mode of preparing the coffee. They let the berries lie in a heap till they are quite black, to impart all their sweetness and aroma to the grain within.

VALLEY OF THE AMAZON.

Demantina, Brazil, May 25th, 1871.

Retrospects and Prospects.

The harvest is over, and it may be profitable to take a survey of the field.

The wheat crop in the upper districts of South Carolina has proved a dead failure. Now and then you may hear of some favored individual who has made a good crop, owing to peculiarity of soil, seed or season.

What is the cause of this failure, every year becoming more common, is a question not readily answered.

It is not confined to any one section ; you hear the same complaints from New York, Maryland, Virginia and Tennessee—famous wheat regions. Has the wheat become subject to more diseases from climatic influences, from bad culture, careless selection of seed or exhaustion of the necessary salts of the soil?

We know but two farmers in all our circuit who have made a fair crop this year. They both planted mulatto land, well adapted to wheat, which had been in cotton, and was heavily cotton seeded.

The wheat was an early variety and was sown late. It had rust but it came too late to ruin the crop. We know several others who took extra pains, ploughing and cross-ploughing, cotton seeding fifty bushels per acre, who made nothing but straw. We sowed a field of grey, post oak land rolling, which had been two years in cotton, and manured with Carolina Fertilizer at the rate of two hundred pounds per acre; yield about three bushels per acre. It was injured more by fly than the rust. We had another field red land, rolling, red oak, hickory, dog wood and white oak growth, cleared since the war and alternated with cotton, corn and wheat; it was ruined by rust and fly and will not make two bushels per acre. The best land had the most filled heads.

What is rust? The rust which now attacks the wheat is very different from the old time rust, which attacked the stalk and split it open. This modern variety attacks the leaf, and by degrees saps the vitality of the stalks. It is identical, we think, with the oat rust and the fodder rust, and has been growing worse every year. Fortunately we have been able to find two varieties of oats, (the red and the yellow,) which are not liable to rust, and no man of common sense ought to waste time in sowing any other sort. Mr. Ramsdale to the contrary notwithstanding.

We would like to learn through the readers and correspondents of The Rural Carolinian, if there is any variety of wheat which has not been subject to rust. We are convinced that early or late sowing, thorough preparation or high manuring, will not protect one against rust.

Again, at the blooming period, if the weather should be boisterous, cloudy and rainy, the wheat will not fill well; will be what they call "peaked headed." The same sort of heads will occur too on spouty pipe clay lands. Chess or cheat (the variety resembling oats and the bearded as it is called) are becoming great pests among wheat. It is very difficult to get rid of them. The seeds are distributed by birds so extensively. We rode a few days ago

over a field which had been in rye last year and not pastured. The owner thought he had a grand crop of volunteer rye; but when it headed there was not one stalk of rye to a thousand of cheat. "Old Standby told him so —that wheat or rye would turn to cheat and so it did."

* * *

Cultivating Corn after it has Tasselled.

It is the opinion of some farmers, that after corn put out the tassel, that hoeing or ploughing it is not only useless but injurious. This opinion must have arisen from observing the results, when the plough and hoe had been injudiciously used. For practice and theory corroborate each other as to the beneficial effects of the proper cultivation of corn after the tassel is out, nay, even to the stage of the "roasting ear." One planter, (I think Mr. Phillips, of *The Southern Farmer*,) writes that he kept his corn blades green, until his corn was nearly hard, by running a cultivator lightly through it every ten or twelve days. Thousands of farmers can testify certainly, to the good effect of surface culture of corn after tasseling.

If there is a time when corn needs all the resources of the soil, every contribution from every rootlet, in full, it is from the time it bunches for the tassel to the full formation of the grain. Whatever interferes with the supply of sap to the stock at this time, must in some measure injure the yield. Now grass and weeds injure to a very sensible degree this supply of sap.

But if there was no other way to remove this grass, except by deep ploughing with turning ploughs, it would become a question, whether the ploughing would not do more injury than the grass; and probably the wiser course might be to leave it undisturbed. But a good farmer will not let the grass get so far ahead, unless he is circumvented by the XV. Amendment or uncontrolable circumstances. Where the custom prevails of ploughing corn deep, putting the share below the level of the deepest corn root, it would indeed be wonderful,if tasselled corn after receiving such a working, cutting off all its supplies nearly at one stroke, did not wilt, fire and fail. There is a custom too, of heaping the earth around the stalk. This is a sort of a farewell caress; but when holes are dug near the stalk to get the earth for the mound, many corn roots are severed, and the corn injured in proportion, but the sweating toiling farmer, fully believing that the larger he make the hillock, the larger will be the ear, fondly piles it up. This kind of cultivation is probably the sort that has been witnessed by those who cry out against working corn after it has tasselled. But, keep the surface stirred lightly, do not disturb a corn root if the grass can be removed without it, keep shallow, stir the surface often, and you may work corn as late as you please, not only without injury but with benefit.

Orange Spring, Fla. MAX REMARX.

Black Rust in Cotton—What is It?

Last year I planted land subject to this disease and blight; consequently I took notes, and observed its progress closely. I used a fertilizer composed of salt, plaster and Peruvian guano, equal parts, mixed on the plantation; of this I used three hundred pounds per acre on that land. The cotton grew off beautifully; the rains being all that could be desired, and favorable to clean culture, and it never suffered for work. About the first of July it showed symptoms of the *Black Rust.* I use the term *black* because the leaves turn black, curl up and fall off, and to distinguish it from *Red Rust*, which does not kill the stalk, or so completely ruin the crop. It soon proved fatal to my cotton, as it stopped making. The young bolls never matured, nor did the grown bowls open, except in a very imperfect manner.

Now for my discovery, and I give my reasons that others may observe for themselves, make the test and satisfy themselves that I am right in my observations and conclusions.

I had come to the conclusion that it was for the want of vegetable matter in the soil, or that the land was too wet and needed thorough draining of the sub-strata, which held the water in a quantity sufficient to sour the soil. The latter condition is not the cause, but it produces the cause by generating small worms or insects, not larger than a small pin, and one-quarter of an inch long, of the same kind that kill corn, on the same quality of land, by entering the tap-root and ascending the stalk. The proof is that this quality of land is always subject to Black Rust, more or less, as the seasons vary in favor of, or to the reverse. Further proof: This land had not been in cotton for ten years. Part of it had been lying out for ten years, and had a fair amount of vegetable matter restored; part of stiff low ground and part elevated light soil river bottom. On this land, in the same row I found stalks perfectly green and blooming, while the next stalk was perfectly dead as was the larger portion of the field. This induced me to make an examination, by pulling up the green and the dead stalk, washing them and examining the root. I could see no difference except one was dead and the other green; and that the dead stalk showed more decay just at the ground than anywhere else. This led me to dissect the root by cutting off all the laterals and then commencing on the tap-root, which I cut off half inch at a time, and found it solid until half-way up the root; it then had the appearance of a pith. In a healthy plant the pith does not make its appearance below its first limb. Right here I found a very small hole from the outside to the centre of the root. The insect then ascended the stalk until it struck the pith and sapped the stalk of its vitality or nourishing power, consequently the leaves were the first to perish, next the boll, and finally the stalk.

Now, gentlemen, you have my views and experience on the Black Rust disease in a condensed manner and to the point. Examine for yourselves, and notice if all the land subject to *Bud Worm* in corn, is subject to Black Rust in cotton. If I have really discovered the cause of this disease, I hope

some one more competent, may give an effectual remedy, and in this way we may be mutually benefitted by our journal. I have offered my views so that all may have a chance of testing the reality of the discovery on the present crop.

Broad River, S. C. HENRY W. PARR.

"Clover and Rotation of Crops."

The article in the May number of THE RURAL CAROLINIAN, reminds me of "the good old times" when I was a farmer—and, I may add, a successful one—in Western North Carolina.

I adopted there a rotation which succeeded admirably. I commenced with corn, ploughed deep, spread all the manure I could gather on the surface, harrowed thoroughly, and opened my drills with a narrow, long bull-tongue plough, running *deep*. The plough being narrow, and land in good order, the seed when planted was not more than two inches below the surface, but quite deep enough. I cultivated level, first running deeply and very close the corn with a small subsoil, followed soon after with cultivator. Second ploughing, subsoil again, deep but a little off, (say six or eight inches from the corn.) I then used the cultivator as often as practicable until the corn was between three and four feet high, when I again put the subsoil deep as possible into the centre, between the corn rows. I followed up with the cultivator and passed the hoe through, chopping out any weeds or grass, and leaving everything *level* and in splendid order. This was towards the middle or end of July, in that climate.

The laying by of the corn was immediately followed by the sowing of my grass seeds—Clover, Timothy, Red Top or any other—scattered evenly along the corn rows. If we had a rain within a day or two after sowing the seeds, the work was accomplished. If no rain, then a light brush was dragged through each row by a mule or horse, with a small boy to ride and guide. A good walking around would brush in ten or twelve acres per day. I never failed to get a good stand of grass, planting as described above. You must know, Mr. Editor, that at the laying by of the corn crop the soil is in the very best condition, if the corn has received proper attention, and work done as it should be, grass seed put in soil that has been well worked up for several months, will soon make its appearance and grow finely, if not killed out by the hot sun. Now, the corn offers all the protection from the sun that is needed for the grass when young. By the time the blades are fit for fodder, the grass is strong enough to take care of itself.

After the corn was gathered, (at any time before April,) I cut the corn-stalks close to the surface, with a mower or a sharp hoe. If the grass is to be converted into hay the first season, the stalks must be hauled off; but if to be grazed, the stalks after chopping may remain. After the corn stalks have been removed, and after a rain, when the soil is sufficiently soft to

admit the pressing in of the corn stumps, the meadow must be rolled. This may be done late in Spring when the grass is up several inches high. The rolling will allow the mower to shave very close.

By sowing clover on grass seed as above, a *full* crop of hay may be secured the following summer—ten or twelve months after seeding. To put in grass seed with small grain, the young grass will be smothered out if your oats or wheat is of thick and luxuriant growth. The corn protects from the sun, but does not in the least smother the young grass.

Now for my rotation. I have secured a good stand of clover *after* my corn. The clover is cut or grazed off in *early* summer; a second crop is allowed to grow for seed. When the most advanced *burs* (say about one-third) turn brown, then put in the plough and turn everything under deeply. In fall or spring, plant wheat or oats. After your small grain is taken off you will have quite a sprinkling of clover to turn under in the early fall, or just before corn planting in the spring, if you prefer to turn in your stock in your stubble field in the fall. Plant corn again in spring, and give yourself no farther concern about your stand of clover. Work your corn well and lay it by in nice condition; your clover will appear in due time. With the above rotation, my farm improved yearly (beyond my most sanguine expectation.)

If the farmer will give to the soil the *second* crop of clover, (the second crop of the season,) he will never have to re-seed his field. But if he persist in grazing off every thing and return nothing, his *rotation* will end in disappointment, and the old cry of "the clover has *run out.*"

Clover seed should not be planted more than a fourth of an inch deep. If buried deep it will remain in the soil, however, for years without vegetating until brought near the surface, under the influence of atmosphere. I have seen an old pasture, which has been closely grazed for many years in succession, ploughed in winter, and a good stand of Red Clover appeared in the spring.

St. Gemme, La. F. W. J.

Chemistry on the Farm.

A lady farmer, Mrs. Eliza S. Turner, has, in *The Tribune*, the following sharp hits at what she calls "Quack Farming." Science has done much—far more than it gets credit for among the farmers—to improve our agriculture, and the true reason why it has not done more is, as Mrs. Turner truly says, not that we have so much, but so little of it:

It is so much easier to work by methods already proven than to think out new for ourselves, or to try the effect of some other thinker's theory. It is easier, and in one sense safer, for we know by experience that by sticking to the old plan we shall get some sort of return, whereas by the new we might get no return at all. Just as Columbus might have been wrecked on his voyage of discovery, in which case his friends would have told his wife that he would better have taken their advice and stayed at home.

But, on the other hand, it is in these days by no means certain that by planting as our grandfathers planted we shall meet with even a moderate

success. As we are all aware, the conditions under which we labor are constantly changing; the field that is ploughed by the sixth generation is not composed of the same earth as when it was ploughed by the first. Each tiller in his turn has taken from it some valuable elements which none of them knew precisely how to put back.

And this is why the knowledge of the principles of chemistry is not only desirable but essential to the Eastern farmer. In the West, on soil just fresh from the hand of the Divine Chemist, who has composed it of all the ingredients necessary to vegetation, the farmer has nothing to do but throw in his seed and take in his harvest; but in the East, where man has for centuries been disarranging the original combinations, the time has come when he must learn how to restore the lost constituents of the soil, or he must give up farming.

"But we do restore them," say the farmers; "we try pretty much everything we hear of, and by and by of course we shall get it right."

This sounds very much like the old-time treatment of the sick. "Got a fever hey?" says the oldest inhabitant. "Well, a good thing for that is to pound together three toads, one sassafras root, one quart of ashes, and a gallon of water from under a stone where two springs rise together; drink half, and apply the rest to the small of the back. Feel any better? No. Well, then, we'll try coals of fire on the top of the head. Does you no good hey? Then suppose you stand this evening with your face to the west, turn round three times, and swallow a pint of snake broth that has been stirred with a dead man's hand: I've heard of that being good."

What says the good old fashioned farmer? "Wheat won't stand up, hey? Well, we'll try bone on it. Does no good I declare! Maybe my seed's run out; I'll get some of neighbor Jones next time; to be sure I hate these book farmers, but his wheat did stand up last year, and if it did on his land, why shouldn't it on mine?"

"What! all down again? I bet he cheated me in the seed." "Well, if you will be experimenting, get one of those new phosphates." "Which one? O, any one; we'll try 'em all around; there's no knowing what will suit a piece of land till you try it."

Which is like saying there's no knowing when there'll be a moon.

Now, it may possibly chance to any quack doctor to hit upon something that works a cure; Smith may ignorantly spread something on his land that happens to suit it exactly, but this would not convince us that empiricism is better than intelligent practice, either for doctor or farmer. "I don't pretend to be a chemist," says Smith, with scorn, "but if I could'nt make a better crop of oats than Jones, I'd give up farming."

"I tried your way," says Robinson, ruefully, "and it did not work at all."

"Want of management," says Smith, and next year tries it on *all* his crops, and is amazed at the difference in the results.

And this again makes me think of Mrs. Partington. "Liniment's a good thing to take," says the old lady. "Once I rubbed some on a sprain and it cured it like magic; so come here my son, and swallow some of it for that cold in your head."

It is a curious thing that of all the occupations in which human beings engage there is not one which is managed so much by guess and tradition as the cultivation of the soil. If a young man expects to be a physician, he does not say "All I have to do is to learn my father's method of curing certain dieases," but sets himself to study the principles of anatomy, physiology, chemistry, botany—anything that may throw a light on the laws of human life in disease or in health. If he means to become an architect, he does'nt

say, "I am a practical man; I want to learn how to build a house, not to fritter away my time with drawing-lessons, perspective, and all that book stuff." If he intends to be a machinist, he doesn't say, "I know how my father made wheels, and fitted this part to the other part to make it go, so I will begin to make locomotives;" but he sets himself to find out, as far as possible, the whole philosophy of mechanics, not only how machinery acts, but *why* it so acts, and consequently how the same principles would act in new combinations.

And this is exactly what we need to learn in farming; not only to know how things act, but *why* they so act, and consequently how they are likely to act under other given conditions. And these things we shall never know, and farming will never grow to be more than a series of childish blunders until it is based on its true foundation, the science of chemistry. Farming *is* chemistry; and every farm is a laboratory, whether we will it or not; and every simplest result, the coming up of white clover in one spot, the deepening green of the grass in another, the height of the corn, the rot of the potato, the blight of the wheat, the varying quality of milk, the varying texture of beef, the varying taste of butter—each is the inevitable result of a chemical law, the secret of which it is our business as cultivators to discover, not by blind applications of this or that specific, but by an earnest study of those eternal principles which are the foundation of all vegetable life.

"Such a talk about your phosphates and sulphates and all the other ates and ics and isms," said a farmer the other day; "and what does it all amount to? Have they made the wheat stand, or helped the potatoes, or rid us of apple borers, or kept our chickens from dying? No! Then what's the use?"

The use has not yet been demonstrated to any large extent, from the fact that we have not so much, but as yet so little science. Agriculture, *as* a science, is yet in its infancy; when it reaches such a stage that a man shall know, when he puts a seed in the ground, exactly what elements compose that handful of earth, and exactly what other elements are needed to bring that seed to its highest possible development, and exactly how to put them there in such form as to be best appropriated by that seed, then we shall have a science of farming, and then will the occupation of the farmer be among the highest on the face of the earth.

The Unlucky Farmer, or Farming Don't Pay.

The conversation narrated below took place a long way off, and near the shores of the Pacific, but with a few changes of terms it might, we fear, be applied to cases nearer home. We quote the *Williamette Farmer*, Salem, Oregon:

Not long since we heard a conversation something like the following:

Mr. B. of the City—"Ah! how do you do Mr. Johnson? It is some time since you have been in town. What is the news in ——?"

"Not much—bad weather and hard times."

"Hard times among farmers? I thought you were all doing well. Produce is high, and there is an active demand for it."

"I tell you we are seeing hard times in the country. No money to be had. I have not received a dollar for a month."

"What have you done with your wheat?"

"Oh, that was sold before harvest. Our store account took it all, and, you know, if we did not pay that, we would get no more credit at the store."

"Well, did not you raise some oats?'

"We have seven horses; all of them are wanted by the boys, and we had no oats to spare."

"Well, had you no stock for sale, no sheep or hogs?"

"Our stock has done mighty poorly. The grass is all eat out, and we have not sowed any tame grass-seed for pasture. We sold a hog or two, but they were small, and did not bring much; besides, we wanted about all the hogs we raised for the family. We keep several dogs for hunting, and they have made way with most of our sheep. Our wool is hardly worth taking to market."

"I notice that high prices are now paid for potatoes. Have you them for sale?"

"We did not plant many last spring, and the boys neglected to take care of them, and the hogs broke into the patch and rooted them up and eat them, and we have not any for the family. We have had awful bad luck, and are getting discouraged. We can get hold of no money. It is *hard times* with us."

"And I think it ought to be. If you do not see and feel hard times, effects do not follow causes. According to your own account, you spend your crop of wheat before you harvest it; you raise no more oats than you want to feed out to your worthless scrub horses; you have no cattle to sell, because you are too thriftless to provide tame pastures; your pork crop amounts to little, as you have nothing to fatten hogs; your sheep are killed by your half-starved dogs, and your potato crop was destroyed, as you were too heedless and careless to provide a safe fence against your starved hogs. I think, according to your own account, you and your boys are seeing *hard times*, and I think you deserve to do so. Now, my friend, go home and turn over a new leaf in your life. You have neighbors with no more advantages than you have, who are making money and enjoying all the good things of life. These neighbors are industrious. They are even now putting in wheat every fair day. Their fences are all in order. When the season for sowing wheat is past, they will have a prospect for fine crops. They do not pledge their wheat to the merchant before it is sown. They will have a fine crop of oats—much of it for sale; besides, they have fine pastures for their working horses and those they are raising for market. They are now about planting peas, for a supply of them for fattening a large number of hogs for market next fall. They have a good flock of sheep, have excellent pasture for them, and will have lots of wool for sale if your dogs do not play havoc among them. Their fields of potatoes are never destroyed by hogs, and they have now fair supplies to feed their stock occasionally. To say that you cannot follow in their path—do as well as they do in raising stock, and grain, and vegetables—is only to say that you have no energy, no taste, no ambition—in a word, that you are a thriftless farmer."

"You talk pretty plain. I believe I shall sell out and go to Ochoco or Tillamook."

Aside.—"This class of farmers *would* do well to move from the Williamette Valley."

Such farming don't pay anywhere.

Are we Ruined?

Once there was a man whose house was burned down. He had plenty of land, and stock, and appliances for work left, but on reviewing the situation he made up his mind that he was ruined. Now he was a rather obstinate old chap, and would listen to no argument which was opposed to his own convictions. "Why, my friend, you are not ruined," his many friends would say; "you have a bright prospect before you; all you have to do is to quit whining about the past, and look only to the future." But ruined he would be, and nothing would insult him more than to say there was a chance for his reviving; and sure enough he was ruined; he let go all holds—everything went to the dogs, and he died a pauper.

That's the condition of our country to-day. The fanatical persistency with which some people cling to the idea that we are ruined, is perfectly marvelous. The fashion is to recur to the past, think over how many niggers we used to have, and sigh "we are ruined." And if a man attempts to argue against the suicidal notion he occupies the position of a strange Irishman at a fair; he has got to strike hard or wear a thick skin, or he suffers pretty badly. * * And the whole press keeps up the whine from one end of the land to the other. In 1865 the whole world was looking towards our sunny fields for homes, and were repelled by the cry "we are ruined." Of course the world didn't want to go to a ruined country, and so the world and his wife staid at home. Pick up a paper, and we'll bet you that half you read goes to show that we are ruined.

Well, so far as we and our house are concerned, we don't believe we are ruined. We think the road to prosperity is plain. Cease absurd resistance to an accomplished revolution—abandon the sentiments and methods which are as foreign to our era as the Vishnu philosophy. Get the car on the track—put steam on—cry "all aboard," and down the grooves of time we'll drive the train into a future where flowers bloom, and birds sing, and men go about with pockets full of rocks.—*Clinton (La.) Democrat.*

How Corn Pays in the South.

The *Mobile Register* says that the production of corn in the South pays better than it does in the North. True, our yield per acre is not so large, yet the greater value of the product overbalances all shortcomings on that score. A reference to the figures support this statement. The report of the Commissioner of Agriculture for 1869, shows that the average yield of corn, per acre, in South Carolina, during that year was 11.6 bushels; and the average price at which it was sold $1 40 per bushel. In Illinois, the great corn State of the Union, the average yield to the acre was twenty-three bushels, and the average price per bushel 57 cents. This shows that South Carolina made per acre $16 10, and Illinois $13 11, leaving a balance of $2 99 in favor of that State. The small yield in the South is attributed a good deal to neglect and bad culture. Corn is secondary always to cotton.

This is well so far as it goes, but the income from an acre of land should be more than $16 10, to encourage the growing of corn, and it can be made at least twice that amount on any land worth cultivating at all.

Department of Horticulture and Rural Art.

Notes on Fruits and Vegetables, New and Old.

This has been a most favorable season for gardening, and those who have given their horticultural operations a reasonable share of attention have generally been rewarded with good crops. In our own case, we certainly have no cause to complain. The mole crickets gave us a good deal of trouble in the early part of the season, but in spite of their attempt to ruin our garden, we have had an abundance of nearly every variety of fruit and vegetable that we have attempted to grow. Our experience with some of them—especially new or little known kinds—may be of use to others.

Lettuce.—We had on trial several new varieties, among which Golden Fringe and Hanson proved very good; but Boston Curled, Early Simpson (also a curled variety) and Perpignan are still our favorites.

Radishes.—We prefer the olive-shaped kinds, of which the French Breakfast (white tipped) and the Early White are the most desirable—quick growing, tender, crisp and fine flavored.

Turnips.—The kinds grown were Purple-top Strap-leaved, one of the best when well grown; Long White Maltese (sometimes called Long White French) and Sweet German (a white Ruta Baga, otherwise incorrectly known as White French). All these did well, and were of excellent quality, very early in the season, but afterwards became bitter, as all turnips will when grown in hot weather. We tried the Teltow, or Small Berlin, but it proved, as it always has with us, a failure.

Cabbage.—Little Pixie is earliest of all, and the best of all the early kinds for general family use, but is too small for market. Early Ulm Savoy comes in soon after Little Pixie, and is even better in quality, but does not head well. Early Dwarf Flat Dutch headed finely, as usual. Marblehead Mammoth made very large heads, but they are coarse, and not equal in flavor to the smaller kinds.

Peas.—The first variety in bloom was Caractacus, but Little Gem was but one or two days behind it, and is to be preferred. Caractacus is recommended as prolific, but did not prove so in this experiment. Eugenie is later, and in quality best of all. Bishop's Dwarf Long Podded is still a favorite with us, as is that old and well known variety, Champion of England. Princess Royal, received from the Agricultural Department, Washington, came to hand too late for a fair trial, and was a partial failure.

Beets.—The only new beets tried were Bastian's Early Red Turnip and Bastian's Half Long Blood, seeds of which were sent us by Henry A. Dreer, seedsman, Philadelphia. Both of them proved very fine, and the former will, we think, entirely displace that old favorite the Bassano. Henderson's Pine Apple and Castelnaudary were both excellent, as usual.

Irish Potatoes—The event of the season among gardeners and truck farmers was the general introduction and complete success of the Early Rose. It has been generally believed that the Garnet Chili, or Chili Red, was the only potato that could be grown here with profit as a market crop. The good qualities of the Early Rose, for family use, were, of course, appreciated, but growers for market distrusted its productiveness. It has done finely this season, however, and will be largely planted, no doubt, next year; but we fear the question in regard to its adaptation to our climate is hardly settled. The past spring was an exceptional one, and so favorable to the crop that almost any sort would have given a good yield. We hope, however, that the Early Rose will stand the test of less favorable seasons and prove itself just the thing we want, for its great excellence and beauty are beyond question. Our own crop was exceedingly fine, though not quite so heavy as that from Garnet Chili.

Tomatoes.—We have a large number of varieties on trial, but prefer to speak of them later in the season, when all their good and bad qualities shall have been fully brought out.

Cucumbers.—The Stockwood, (seed grown in England for the Department of Agriculture,) though not very early, proved the finest and most productive kind we had.

Squashes.—Of the early, or summer squashes, (*spring* squashes they are with us,) we find nothing equal to the Summer Crookneck, but our seed—purchased from a good seedsman too—proved badly mixed, giving us squashes of all shapes and sizes. Another package, labelled Canada Crookneck, an entirely distinct variety, and not a summer Squash at all, proved to be genuine Summer Crookneck. This serves us right, as we ought to have saved our own seed.*

Strawberries.—Our varieties were the same as last year, with the exception that Barnes' Mammoth and Seth Boyden had died out entirely under last summer's sun, and we had added Lennig's White. The crop was only moderate on the most prolific sorts. *Triomph de Gand* gave the best satisfaction, considering quality as well as productiveness. Longworth's Prolific ranked next. Wilson's Albany fell below the foregoing, both in quantity and quality.

* This question of saving seeds, however, is not so simple a one as might at first sight appear. Any farmer or gardener can save some kinds of seeds with advantage, but, in other cases, it will prove the most expensive way of getting them, if he count his own time and labor in the matter. What the seed-grower, with the proper knowledge, skill and appliances, and on a large scale, can do very cheaply, the farmer accomplishes at a comparatively large expense of time and trouble. With most species of plants, too, it is necessary, in order to ensure purity in the different varieties, to grow them further apart than is practicable in a common sized garden, or to grow only a single variety. We can grow our own Summer Squash seeds, (with pure seeds to begin with,) because we have no other kind in bloom at the same time; but later, when we have Yokohama, Turban, Canada Crookneck, Cashaw, and perhaps others, in bearing at the same time, our seed, saved from any one of them, would be liable to be more "mixed up" than that we buy from seedsmen, who can and should grow the various kinds far apart. With melons and many other kinds of plants the difficulty in growing pure seed in a garden is equally great. It is only by confining ourselves to a single variety that we can ensure the same in the seed grown. In spite of these drawbacks, however, we advise saving seeds at home wherever it is practicable, guarding, as far as possible, against mixture and deterioration.

Victoria gave us the largest and handsomest berries of any variety on trial, and of good though not high flavor, but the crop was rather light. Charles Downing did not realize the promise of last season, but will be continued on trial. Nicanor has been rejected as worthless. Lennig's White was planted in the spring, and, of course, cannot be considered as tested. Of its quality, however, we can speak in the highest terms. It has no equal in flavor among the varieties we have grown.

Raspberries.—Our best success has been with the Philadelphia, which gave us a good crop. The Black Caps made a poor growth last season and bore but little. They are now growing finely, and will enable us to judge more correctly of their qualities next season. Several other kinds are on trial, but are not yet sufficiently tested.

Notes on various other garden crops must be deferred till another occasion.

Late Admirable Peach.

This is an old French variety, known also as *Peche Royale, Teton de Venus, Narbonne,* etc.; and is a superb fruit, excelled by none we have at its season, which here is August. Fruit, large, roundish, oval; suture, distinct; apex, swollen; color, pale yellowish-green, with the side next the sun deeply tinged and marbled with two shades of red; flesh, greenish white, red at the stone; flavor, delicate and delicious; tree, very hardy and a regular but rather moderate bearer. It is worthy of a place in every collection. [See frontispiece.]

Growing Winter Cabbages.

On this subject the *Plantation* has the following good advice:

"Do not draw too soon, for we always prefer a good-sized to a diminutive plant. Cabbage must have a deep and rich soil to grow in. Break with a turn plough as deeply as possible, following in that plough's wake with a subsoiler of some sort. The coarsest sort of lot or stable manure should be turned under at this ploughing. Now harrow or drag till the surface is well levelled and all clods reduced. Before the next ploughing, which should be with any ordinary bull-tongue share, gather chip manure and ashes, leached or unleached, and lay them on without stint. We would not hesitate to apply thirty bushels of black-jack ashes, fresh and strong, to a single acre, or one hundred, if they were leached. This, in our experience, has been the manure that has made the greatest yield of cabbages, and to this day we know of nothing that equals it. If your crop is for market, of course lay off your lands so that the labor of culture may be performed by the horse and plough. Not less than three and a half feet between rows, and two feet between plants, we suggest as the proper distance. Plant deep, and, if the season is dry, pour one pint of water at least on the spot you place your plant. If this is done, no one need wait on seasons."

How to Make Cuttings Grow.

The greater number of plants that are propagated by cuttings require artificial heat and the moist atmosphere of a propagating house, but there are many that can be grown in the open air, or in frames or boxes, without artificial heat, and the mode of proceeding is in all cases nearly the same. In the first place, one must know

HOW TO PREPARE THE CUTTINGS.

As a rule, plants to be propagated from should be in a free-growing state, because the best cuttings are those of shoots newly formed, and the worst those from shoots of last year. Indeed, these latter are of no use at all, except in the hands of the professional propagator. If the plants are not freely growing, therefore, the propagator must wait for them. But, at this time of the year, the plants the amateur intends to cut from will be, for the most part, full of young shoots, and the removal of a crop of these will cause the plants to throw out more, and the question arises, how are the cuttings to be made?

Fig. 1.

Suppose we look over a lot of fuchsias now, we shall find them full of little stubby side-shoots all ready to hand, without demanding any particular skill to remove them. Select one of these plump shoots, of an inch or an inch and a half long, press the thumb against it, and it will snap away "with a heel"—that is, with a thickened base, the separation taking place at the point where it issues out of the old wood. When you have removed it, it will probably have such an appearance as in Fig. 1. All that this requires for its preparation is to remove the bud which has just started near the base of the cutting, so as to leave a sufficient length of clear stem to insert the cutting in sand firmly. When so inserted, and kept moist, warm and shaded, roots will soon be formed at the base; and as soon as the roots have begun to run in search of nourishment, the top of the shoot will begin to grow, which is the sign for potting off.

Fig. 2.

But suppose we have a chrysanthemum instead of a fuchsia on which to operate. There will be plenty of shoots; with a knife or a pair of scissors remove a small one, not more than three inches long and two inches in length will do. It will look something like Fig. 2. It will require no preparation, except to remove the lower leaf to give sufficient length of stem for inserting in the sand.

Or suppose we have a hard-wooded plant of robust growth, and which is known to be easily rooted, then we may venture to take a still larger cutting. Here is a side shoot of Veronica Lindleyana, (Fig. 3;) it consists of four joints, is young, the wood not yet hardened, and needs no preparation at all, because there is a proper length of stem for its insertion. But in the case of plants having large fleshy leaves, it may sometimes be needful to crop off half of every leaf except those next the top bud; but, as a rule, as many leaves should be allowed to remain as possible, because the more leaves that can be kept alive while the cutting is making roots, the quicker will it become a plant.

The size of the cuttings is a matter of great importance. As a rule, the smaller they are the better. Still, if very soft, many may damp off unless very skilfully handled, so the amateur must secure them moderately firm. Three or four joints will generally suffice of most things, or say nice plump shoots of from one to two inches long. If young side-shoots are scarce, longer shoots may be cut up in lengths of three joints.

Fig. 3.

INSERTING THE CUTTINGS.

Insert the cuttings in pots, pans or boxes, filled with clean sand. The books say "silver sand," but the color is of no consequence. From the time the cuttings are inserted in the sand till they have taken root, *they must never be allowed to get dry;* for if a cutting once gets wilted there is little hope for it. Where cuttings are difficult to grow, exposed to the drying atmosphere, one may use a bell glass or a tumbler with advantage, or the pots or pans may be placed in a box that can be closely covered with a large pane of

glass; for these simple instructions are not intended for those who have regular propagating houses, and who are not supposed to need the information.

POTTING OFF THE PLANTS.

Pot them off as soon as possible after they have formed roots. In potting, be careful not to break the newly-formed roots. No matter what the plants are, the soil at the first potting should be fine, and with a considerable proportion of sand added. Generally, peat and leaf-mold answer admirably as a staple for potting newly-struck cuttings.

The Caju and other Tropical Fruits.

The *Caju* is a fruit worthy of more notice than it gets. It will flourish on the most barren soil of this country; in fact, it grows on the sand campos, which are too poor and dry to produce grass in summer season. In such places the fruit is small, but very sweet; when cultivated it grows to the size of the pears of our States, and something near the same shape; one will afford near a gill of juice which is very nice, and refreshing. Some are bright red, others yellow, and others still variegated like an apple. The fruit is borne on the extremities of the limbs. The flowers are very fragrant. One of the most remarkable features is the position of the seed, which hangs on the outside of the fruit, there being but one seed to each, which is at the bottom; the wine made from this fruit is very good, easily made, and commands a high price. The trees give fruit the second year from the seed, and continue to improve for many years.

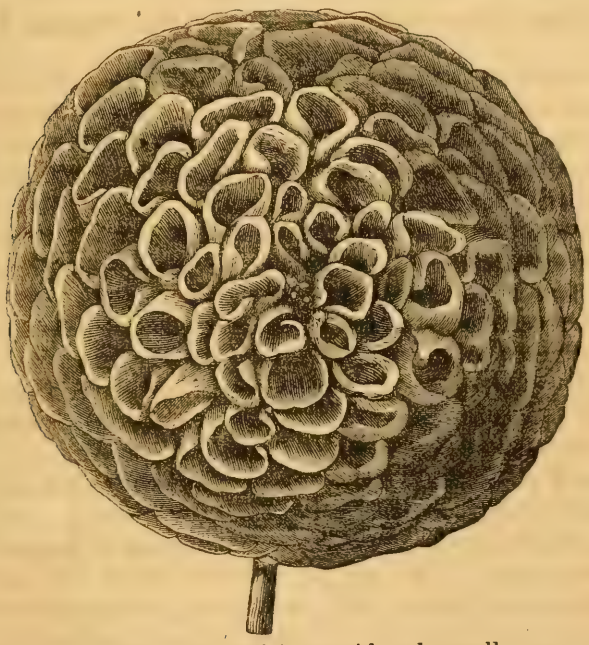
The varieties of the pine apple are very numerous, some growing very large, and some very long; some are very acid, others very sweet; some have double crowns, others are without crown; the varieties of bananas and plantains are also numerous. Some are not over two inches long and one inch in diameter, with silver colored skin; some grow on trees fifteen feet high, others on trees not over five feet; the short or low trees bear fruit bunches most disproportionate to their size I have counted one hundred and ninety-five on a bunch, the end of which rest on the ground; the skin is green when ripe, fruit about four or five inches long, and one and a half in diameter.

The plantains are very fine and large, and of many qualities. They can be fried, boiled, baked or roasted, with, or without meat; are most delicious when ripe, but are often used green. The natives (Indians,) in the absence of fish, often live on *Fariniah de Mandieca* bananas and plantains. When plantains are ripe lay them in the sun for three or four days to evaporate the water they contain, then take off the skin and sun them a few days, and you have a preserve that equals dry figs, and cannot be surpassed to make fruit cake. The trees are propagated by the young trees that come up from the root of the mother or parent tree; they cannot be called suckers; each tree produces only one bunch of fruit. When the fruit is cut the tree must also

be cut down, to make room for the others; the young trees are in every stage; some just showing the blossom, some with young fruit, others half grown, and some coming out of the ground. They have only to be planted once, and they spread very soon. I must not omit to mention that the trees give a very long and strong fibre; it is found in the foot-stalk of the leaf which runs down and surrounds the tree from leaf to root, and it might be made a source of profit.

Demantina, Brazil, May 25, 1871. VALLEY OF THE AMAZON.

Growing Seedling Dahlias.



The growing of dahlias from seed is considered usually very precarious, as regards the product of well-formed compact flowers. I have known a grower with twenty-five hundred seedlings obtain but one single flower of excellence; but the result I am now about to relate is of a very different character. In the fall of 1866 Mrs. Oliver Alger, Cleveland, Ohio, selected seed with great care—she being a lover and amateur grower of flowers—from some of the best dahlias in her garden. Early in the spring of '67 these seeds were sown in pots in the hot-bed frame, and about the 1st of June transplanted to the open ground. The result was, that when they came to flower, she had but two imperfect flowers, or, in other words, but two of the plants gave blooms that would not command the eye of the florist as readily as two-thirds of the varieties under name and cultivation. The variety of colors was from a dark rich maroon red to a light sulphur yellow, and the drawing I give is not one of the best, nor the poorest, but an average of the perfection and form which the collection embraced.—F. R. E., *in Horticulturist.*

Improved Native Plums.

The ravages of the Curculio have of late years increased to such an extent as to cause the almost total failure of the crops of the finer varieties of plums. Notwithstanding all the remedies advocated to prevent the Curculio from destroying the fruit, this insect has proven too strong in numbers, and, excepting a few isolated cases where unusual pains have been taken to guard against this pest, the labor required to grow a few plums is worth more than the result. Our native varieties, such as the Chickasaw and others, being less liable to be injured by the Curculio, have induced several horticulturist to experiment with them, in order to produce improved varieties, which would at least possess one great advantage over European varieties, in being *Curculio proof*. The results are quite satisfactory, but we look for still better ere long.

The *Chickasaw* type has furnished the best material to experiment with; its offsprings are all very vigorous growers and abundant bearers. We name a few of the most meritorious:

Wild Goose originated in Davidson County, Tenn., its name is claimed to be derived from the fact that a pit of a plum was found in the crop of a wild goose, and being planted produced this variety. Other stories equally unfounded give it a different origin. The fruit is large, one and one-half to one and three-quarter inches long by one and one-quarter broad; color, bright vermillion red, with numerous minute white dots towards the apex; stalk, very slender, short; flesh, rather coarse, juicy, vinous and pleasant. Compared with the finer foreign varieties, can be classed as second rate in quality. Flesh adheres to the stone. Tree, very vigorous; leaves, light green. Very productive; maturity beginning of June. The fruit is apt to drop from the stalk when fully matured. As a market fruit it is very desirable, combining fine size, beautiful color, and good quality. The *Miner Plum* of the West is said to be identical with this variety.

Newman's.—Another offspring from the Chickasaw. Fruit, medium oblong, smaller than the foregoing. Color, bright vermillion. Flesh, rather coarse, juicy, and with a pleasant vinous flavor, adheres to the stone; ripens end of July. Tree, vigorous and productive, foliage smaller than Wild Goose.

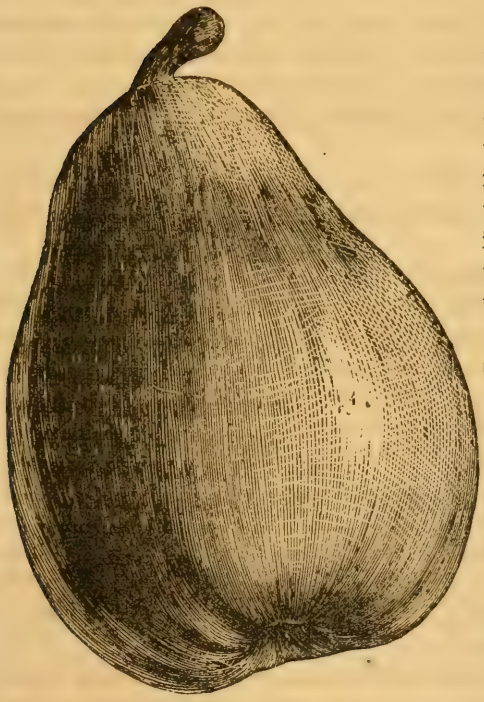
Mountain Plum of same parentage. Fruit quite large, oblong, bright vermillion red, flesh similar to above; ripens end of July and during August. Most productive and vigorous grower; foliage resembling Chickasaw, but somewhat broader.

De Caradeuc.—Originated by A. de Caradeuc, Esq., S. C., some fifteen years since. Fruit round, a little flattened. Skin yellow, nearly covered with brown red, which turns to dark red at full maturity, mottled; suture marked by a crimson vein. Flesh, melting, sweet and vinous, slightly adhering to the stone. Stalk, very slender and short, readily parting from the fruit when fully ripe. Quality good. A very meritorious fruit. Tree very thrifty grower, foliage dense; leaves, deep green, broad, entirely distinct from any

native type. Maturity, end of May and beginning of June. Doubtless a hybrid variety, as it shows foreign characteristics; free from Curculio.

These we consider profitable orchard fruits, and will supply the market from 20th of May until the middle of August with fruit that meets with a ready sale and at good prices.—P. J. BERCKMANS, *in Farmer and Gardener.*

Doyen Dillen Pear.



This pear is not much known, though it cannot be called a new one. The tree is a vigorous grower, and productive, and it may prove to have some merit as a market fruit, though it comes in at a time when good pears are abundant. It is a fruit, however, that the amateur may safely add to his collection.

Fruit, medium, pyriform, with a stout neck. *Skin*, yellow, thickly covered with russet dots. *Calyx*, small, open, in a small, moderately shallow, and slightly wrinkled basin, surrounded with russet; segments short. *Stalk*, short, stout, obliquely set, with a depression on one side. *Flesh*, melting, juicy, pleasantly sub-acid, slightly vinous. Quality, very good. It is in season in September and October.

The Mexican Persimmon; (Diospyrus Mexicana.)

In central and Western Texas, this Persimmon is quite common, being most abundant on limestone hills. It is sometimes found in the rich bottom lands of valleys. In the vicinity of Austin, it is a small tree; its largest size is about twenty feet high with a diameter of about nine inches. It generally grows in clumps; yet solitary trees of it are not uncommon. Its branches are thick and the spray dense, forming with the leaves a deep shade. Its leaves are ovate or obovate, obtuse, sessile, dark green above, paler below and densely tomentose, alternate; often so close as nearly to be opposite; one to one and a half inches in length, and from a half to one inch wide, varying much in size. Its trunk and branches are smooth, with a light,

gray and brown colored bark, which occasionally peels off. The old wood is hard, yellowish-white, and close grained, but the tree is too small to make the wood of much use. It has pale, yellowish-white, small bell-shaped flowers in March, which are aggregated or solitary. Fruit ripens in August; when ripe, dark blue or nearly black, very juicy and sweet, without the pungent taste of the Virginian persimmon. Some like it; and others think it insipid. It is a shrub in the Southern part of this State, in the sandy soils near the Gulf, in the neighborhood of Corpus Christi, where it bears an abundance of fruit.

It is worthy of cultivation, and would probably thrive in all the cotton growing States, being perfectly hardy here, where the cold is rarely twelve degrees, Fahrenheit, forming ice an inch or more in thickness.

S. B. BUCKLEY, *in Our Home Journal.*

The South the Garden of the World.

The London *Chemist and Druggist*, in a very appreciative notice of Dr. Porcher's "Resources of the Southern Fields and Forests," takes occasion to say the following true words about the Southern States:

"If the Southern United States are not the garden of the world, it is rather the fault of those who are responsible for their cultivation and development than from any natural inferiority to any other land on the face of the earth. It occurs to every mind that this is the home of the chief products which civilization demands. Cotton, sugar, and tobacco are products of such immensity as to dwarf those which other lands bring forth, and yet these are not all. Vast quantities of wheat and rice are exported, and a luxuriant but uncultivated vegetation besides testifies to the immense resources which are forthcoming. These Southern States comprehend an area of territory equalling that of Great Britain, France and Germany. Watered by the grandest rivers, and rich in every variety of soil, with millions of acres of dismal swamp yet unreclaimed, there is a future for this district which will make it a territory to which all the world will turn for its vegetable supplies."

These truths are very imperfectly realized among ourselves; but Dr. Porcher's book, with the help of its foreign reviewers, will, we trust, open the eyes of our people to the grandeur and the immense value of their inheritance.

THE MANDARIN ORANGE.—The "Mandarin Orange" is said by writers to be the best known variety—sweet and thin-skinned, and possesses the quality of keeping a longer time without decay than any other kind. There is another variety of orange, smaller than the orange of Los Angelos, known as the "Pisco" variety. It has blood-red flesh, of a deep, orange-colored skin, very thin, and more highly prized than any other in South America. It is found at Pisco, a seaport town about one hundred and twenty miles south of Callao.

Dairy and Stock Department.

The Merino Sheep Question.

I write, Mr. Editor, to respond to Col. Aiken's call for a joint stock company to introduce Merino Sheep into this State. I believe with the Colonel that herein lies the solution of our present troubles upon the labor question. The Merino will work our lands much more profitably and peaceably, than our present laborers. The only garrison we shall need, will be a small force to guard them against dogs and thieves. Instead of being taxed to death, sheep have actually a heavy tariff in their favor, and it is notorious, that where sheep live, the land always improves. They yield two crops each year either of which will defray all their expenses, leaving the other as clear gain, besides their manure, which is the best that we make.

So fully am I convinced of the truth of what I here assert, (and it is no untried theory with me,) that I will make this proposition: If any gentlemen will furnish me with an hundred or more well-bred Merino ewes, I will take them for two or five years, for three-fourths of the lambs that I can raise from them, giving him the other one-fourth and all their wool. So you may see my faith in the enterprise; I would rather invest money in Merino Sheep than in any other branch of Husbandry for either profit or pleasure.

Col. Aiken is mistaken in his assertion about acclimatization, in the June number. The Merino may be carried to any portion of America with impunity, and will undergo no inconvenience in changing. They are just as healthy in Texas the first year as at any time afterwards. I ordered six for a brother-in-law and myself in 1850. Four were ewes, and all had lambs the following spring. I drove my portion with my wagons to Cass County, Ga., a distance of two hundred miles the next fall, and both had lambs again the following season and continued to do so every year until they died, one raising a lamb at thirteen years of age. Another friend and myself had twenty-four landed from the cars at Cartersville, after a long, starving trip from New York. Having been put to the ram before starting, they were much tucked up and one died during the spring; but with all this suffering and neglect they soon recovered condition, and I raised just one hundred per cent. of healthy lambs, although these lambs were born much later than our native lambs. Every one of this lot of ewes took the ram the next fall before my other sheep. This did not look much like suffering from change of climate. I could give other facts to prove what I assert, but for fear of being tedious will let this suffice.

I have had a good deal of experience in importing sheep. There is much less danger and risk than is generally supposed. A year old Merino, and older, will stand many hardships, and younger ones ought not to be shipped at all. I bought in Vermont, New York and Pennsylvania, at one time in 1859, about nine hundred ewes and rams, for myself and a couple of friends;

seven hundred were driven about three hundred miles and all shipped from Pittsburg to the Gulf and re-shipped by ocean steamer, without a single death until they landed at Indianola, in Texas, but the war ruined the enterprise.

I have stated these facts to show the truth of my assertion, that the Merino sheep is different from most other animals in this respect. This will somewhat alter the Colonel's calculation on the profits, adding at least eighty per cent. of lambs the first year. A hundred good ewes to land 1st November, charge fifty dollars for wintering, by 1st June you have two hundred dollars worth of wool, and at least eighty lambs worth half as much as their dams, besides manure which is no inconsiderable item. Every man who owns a sheep, a cow or a goat, should provide them with comfortable shelters, which can be done at small cost, and is well paid for each year in the food saved and the improved condition of his animals.

I think flocks by hundreds can be delivered here at about seven or eight dollars a head, that will yield an average of at least six pounds of fine wool, worth about two dollars a fleece. The larger the number that is bought the less the price; when only pairs are ordered, they cost twenty to twenty-five dollars each. Pedigreed animals cost more; we sheared this season a small flock of over two hundred, composed of all grades and conditions, but nearly all having a good deal of Merino blood, and a good many full bloods; several were very old and toothless ewes, and several very small yearlings. They averaged five pounds of wool each, and my select flock averaged six and a half; about twenty-five yearling wethers were included, and we have an hundred and six lambs. These are facts and any man can see the wool and the lambs from the two crops. Now how can the farmer beat this?

Near Martin's Depot, S. C., June 13th, 1871. JAMES W. WATTS.

Dairying in the South.

Whenever you lay before your readers, Mr. Editor, papers like the essay of Jas. C. Coit, Esq., you are entitled to their thanks. Although its contents are well known facts, still they cannot be repeated too often, particularly if it is done in a plain, practical manner. It strongly recommends planting corn, and we endorse it to a certain extent. Where the producer is favorably located to market it is a good crop, but where the distance is far and road bad, we would judge it to be a rather cumbersome crop, if not fed to hogs and thus carried to market on hoof. But, under all circumstances, we would recommend *dairy farming*. Our reasons are, first, because a dairy farm produces its own manure in abundance; second, because the produce is easily marketed; and lastly, because the produce itself is less liable to a material fluctuation in price. As this branch of farming is little understood by our Southern planters, we will proceed to give a description, based on more than thirty-five years' experience.

First diversify your crop, and introduce a rotation. For instance, divide

your arable land in four fields: first year, corn; second, oats and rye; third, clover; fourth, clover. Or, divide in five fields: first, wheat; second, corn; third, oats; fourth and fifth, clover. Next procure the best native cows, if you cannot afford to buy Durham or Ayershire grades. These are the two principal requirements on which your success depends. To change from cotton and corn farming into dairying with soiling, start September first, and plant according to table below:

	1	2	3	4	5
	September 1st.	September 1st.	September 15th.	Supposed with	Supposed with
1871..	Oats and Clover.	Clover.	Wheat.	Cotton.	Cotton.
1872..	Clover.	Clover.	Oats and Clover.	Corn.	Wheat.
1873..	Clover.	Corn.	Clover.	Wheat.	Oats and Clover.
1874..	Wheat.	Oats and Clover.	Clover.	Corn.	Clover.
1875..	Corn.	Clover.	Wheat.	Oats and Clover.	Clover.
1876..	Oats and Clover.	Clover.	Corn.	Clover.	Wheat.

(Fields 1, 2 and 3 are supposed to be in corn or small grain this year.)

In the wheat field sow one third of an acre of rye for every head of stock you intend to soil. It will produce early feed in spring until clover can be cut. For late soiling, plough and drill the wheat and rye stubbles with corn as soon as the crop has been removed. Be sure always to cut the land in such shape that you can plant half an acre as soon as the feed is cut off. Field 5, which has brought cotton this year, and is to be seeded with wheat next fall, 1872, must be drilled with corn for soiling at intervals of two weeks, as there is no clover the first year. Suppose we have a farm of one hundred acres under the above cultivation. The produce would be:

20 acres of corn at 25 bushels=500 bushels at $1	$ 500
20 " wheat at 20 " =400 " " $1 25	500
20 " oats " 20 " =400 " " 75c	300
20 " clover " 2 tons=40 tons at $15	600
20 " " " 1 ton=20 " " $15	300
30 cows at $100	3,000
4 mule colts at $100	400
	$5,600

EXPENSES.

Interest on $6,000 at 8 per cent	$ 480
Taxes on $6,000	100
3 hands at $300	900
4 mares' feed at $100	400
Mechanics	50
30 cows at $80	2,400
	$4,330
Profits	$1,270

My estimate of the income and expenses of the cows is taken from my dairy book, where they have been charged with all they have consumed and credited with all they have produced, at the following rates: hay, $20 per ton; meal, 90c. per bushel; butter at 25c. per pound, skim milk and buttermilk at 10c. per gallon. All the above calculations are of course subject to

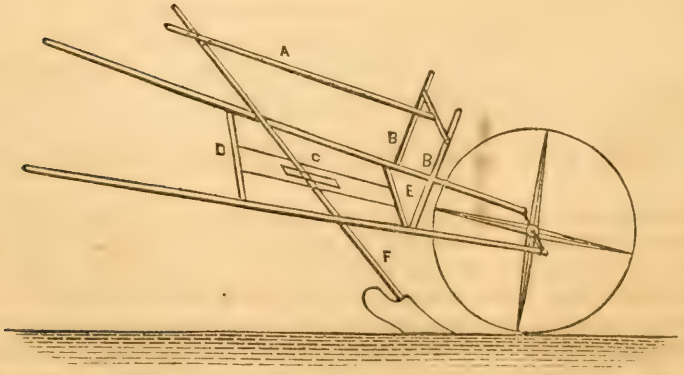
modifications according to different localities. The manure produced is thrown in for extra labor. The annual production of manure is sufficient to give the wheat a top dressing and the corn a full manuring. A month before the wheat is to be sown in the clover stubbles, they must be ploughed, the aftermake remaining on the land. When ready for seeding, spread a light coat of compost, or rotten manure, over the field, and harrow well with a long toothed sharp harrow, and then drill your wheat. The best drill I have seen is "Bickford & Huffman's," of Baltimore, price, with grass seeder, $90 to $100, delivered on car. After the wheat has been harvested, flush plough *at once*, harrow well, lay off with a bull-tongue drills two and a half feet apart and drill corn, one bushel per acre, to be used for soiling or made into hay. When this has come off the ground, haul manure, *spread well*, and bed your land for corn. Plant early so it may be gathered in time for the oats and clover to be seeded in the first week of September. The advantages of seeding clover thus early are that the clover will be strong enough to withstand the winter, and not suffer so easily from drought in spring; it will also better withstand the sudden exposure when the oats are cut in June. *Never allow your stock to pasture your clover!*

Dairy farming improves your soil from year to year, and where you start with a yield of twenty bushels of wheat and twenty-five bushels of corn per acre, you will, in the course of five years, gather thirty bushels wheat and forty bushels corn. Even this yield can be increased fifty per centum by subsoil drainage and subsoil ploughing or subsoil lifting combined.

Okolona, Miss., June, 1871. L. A. HANSEN.

Department of Mining and the Mechanic Arts.

The Barrow Plough.



This plough was invented by Robert Fraser, Esq., of Walterboro', S. C., on the 4th Janury, 1870. In its invention, he followed no known design as he had never seen one, but relied wholly on his own original method of con-

struction; and it is thought by some of the most respectable farmers and planters of the low country, who have tested its value—Burril Sanders and Sampson L. Paul, Esqs., among them—that he has produced a plough whose efficiency for work as a garden and field implement, and in especial for ease and lightness of movement, is unequalled by any similar tool before the public. These also affirm the opinion, that one man with this plough can perform more work in a day, and more efficiently, than three men merely with hoes; and that its special adaptation for trenching rice land, and for other work about the plantation, is much greater than that of others in use. Mr. Fraser has made two crops on his place with the plough, and estimates that he is able to do the work of three full hands with it. Great numbers, also, casually, or with the purpose of critically testing it, have witnessed the ease, beauty and precision of its working; and all such are convinced of its superiority as a cheap and valuable agricultural and horticultural tool, requiring no great strength or skill in its management while working. Those who have tested other inventions of similar kind, do not hesitate to give the preference in all respects to this one.

Farmers and gardeners who wish a real labor-saving tool, simple in construction, light and easy in work, and highly approved in all respects for efficiency, are referred to Mr. Fraser himself. His address is Walterboro', S. C.

The following table of measurement will explain the accompanying drawing:

Diameter of wheel	20 inches.
Handle	65 "
Axle	9 "
A	28 "
B B	10 "
C	24 "
D	16 "
E	12 "
F	32 "

P. J. MALONE.

How an Ohio Farmer Makes a Roller.

First, I cut a solid, smooth, white oak log six feet long; then struck a circle on the ends and hewed it, working to a line so as to make it straight and round, taking off the sap; it was then twenty-two inches in diameter, (two feet is the right size,) then sawed it in two, then with an axe cut the inner end of each, concaving one and one-half inches, bored the ends and set one fourth inch journals ten inches long, sharpened at the point, having a collar on them; the outer ones three inches from the end, driving it snug to the log; the inner ones one and three fourth inches from the end. I mounted one at a time on bearings, then two men run it with their hands as a squirrel does his cage, and with a jack plane set coarse turned it smooth.

For a frame, I made a square sash of three by four scantlings, just long enough for the rollers to run in, and eight inches broader than they were in diameter. The tongue is thirteen feet long, four inches square at the back end, halved on to the middle of the frame and fastened with three-quarter inch bolts, bracing it with iron bars to the frame; it is cut to fit the concave ends of the roller, bored through in the middle for both journels; it is cut to one and one-half inches at the outer edge of the rollers, which leaves a space between them of two and one-half inches, which is no objection.

They need no boxes, only thick plates spiked to the inside of the frame for the collar to run against, with good hard seasoned wood for frame. I burn the holes with one of the journals, and provide an oil hole. It runs light and well; and it cost me just eight dollars, and is better for all practical purposes, and will probably last longer than some that I have seen work, that cost from forty to sixty dollars.

Where fields are large and level, the roller may be made eight or ten inches larger, and it will run easy enough, if true and well mounted. If any one will look at the philosophy of the thing, he will readily see that a medium sized roller is more efficient than a large one.

A. HINSDALE, *in Ohio Farmer.*

Ransome's Artificial Stone.

In countries where sand is abundant and stone is scarce, as is the case throughout a large portion of the South, Mr. Ransome's invention ought to command attention and have its claims fully investigated. We believe it is a most important and valuable invention, and that the material produced is equal to the best natural sandstone; but chemists, engineers, builders and others more particularly interested, should look into the matter for themselves. We reprint from the Baltimore *Gazette* the following description of the stone and the process of making it:

After a series of experiments, covering a period of twenty years, Mr. Ransome has been enabled to produce a stone rivaling in every respect the best natural sandstone now in use, and superior to all or nearly all in homogeneity of structure; in its powers to resist the extremes of heat and cold, and in its perfect freedom from cracks or flaws.

The most remarkable thing about this discovery, next to the cheapness of the material employed, is the simplicity of their manipulation. The materials consist of clean, dry sand, flint or quartz reduced to a semi-liquid substance of the consistence of a light syrup or molasses, and chloride of calcium—the latter being the refuse left in the manufacture of soda.

The rapidity with which this stone can be manufactured, constitutes, perhaps, the most singular feature of all. Within the space of five minutes the sand can be taken from the loose heap and converted into a small block or slab of stone, which is so hard and compact that it will ring under the hammer. The whole process of conversion is one that any intelligent man can learn in the space of a few hours. The dry sand is put into a pug-mill, a small proportion of the silicate of soda, in solution, is added to it, and the two ingredients are intimately mixed together until the soluble silicate is so perfectly diffused throughout the mass that the latter will cohere when its particles are pressed together in the hand. This plastic sand is then trans-

ferred to moulds of any size or form, into which it is rammed by hand. As soon as this operation has been completed, the article thus moulded is laid upon planks, and is watered with a saturated solution of chloride of calcium, when by the action of the calcium upon the silica the process of induration commences, and in a few minutes the moulded article is converted into solid stone. Every species of plain and ornamental work, from a monolithic column to a house shingle, may thus be formed—the largest pieces of stone yet made occupying in the hardening not more than forty-eight hours; the smaller ones but a few seconds. A statue, or block for paving, the most intricate gothic tracery for church or domestic architecture, a bed stone for an engine, rustic work, balustrades, mantle-pieces, vases, cornices, brackets, in short everything that tasks the skill of the stone-cutter may be moulded with equal facility. What, perhaps, will be regarded as equally important, any form that may be desired can be given to this stone, whilst the price at which it can be sold, ready prepared for the builder, will be but little, if any, in excess of what the finer qualities of sandstone would cost taken rough from the quarry. This stone, combining, as it does, the two elements of durability and cheapness, is rapidly growing in high favor in England, where companies have been formed for making it on a large scale. It has received the strongest testimonials from men of the highest scientific attainments, such as Dr. Frankland, one of the Committee of the Board of Works, appointed by Parliament, and Professor Ansted, a member of the British Association, and from a large number of the most eminent builders and civil engineers. The tests which they have applied have been thorough and exhaustive.

The Iron Giant, or Hyde's Steam Wagon.

The *Corrinne Reporter*, of June 10th, 1871, thus dilates upon this new wonder, which we hope will not disappoint the great expectations it has excited:

Colonel Hyde's grand triumph, the steam wagon or road locomotive, was all around town to-day. At 11 o'clock it started across the track, bounding over hedges and ditches, then up on the north side, where it was guided over toward the water-works to drink. Several hundred gallons of Hiram's tank sufficed to slake the monster's thirst, and away it went again. We have described this consolidation of mule, horse and ox teams before, but did not see its capering movements until this morning. Why it appears to swing around in the road at command of the steering apparatus easier than a man could turn a wheelbarrow on a matched floor! This great engine will draw its thirty or forty tons of freight in trailed vans or wagons as readily as it moves unloaded.

Mr. Hanscom, builder of the car, acted as pilot to-day, and surely his pride as a mechanic must have been fully satisfied in the wonderful work of the Overland Steamer. It is the king of the road in every way. In twenty feet it turns completely around, going at its speed, stops with the touch of a valve, and when desired to move on, takes up its march with a step that ordinary obstructions cannot retard. On the next trip of the steamer, the steam wagon is to be taken across the lake by Colonel Hyde, and there put to work hauling ores and freights to and from the mines to the landing. We rejoice greatly at its success to-day, and while seated on its steady front, close by Mr. Hanscom, wished the glory of inventing and manufacturing so useful a machine would sometime be ours.

Department of Natural History.

Specimens of insects, securely packed, (according to instructions given in our October number,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. Charles R. Dodge, Washington, D. C.

The Elm-Tree Beetle.

Elm trees are subject to the attacks of quite a number of insects, but none appear to do so much damage through Maryland and Virginia as the Elm-tree beetle, *Galeruca calmariensis.* In the grounds of the Smithsonian Institution, at Washington, the foliage of a number of elms has been injured to such an extent this season, that the whole tree in each instance looks as if dead, the leaves brown and wrinkled. There are two or three generations in a season; and if at all numerous, the second brood generally finishes the work of destruction commenced by the first. The natural history of the insect is as follows:

The eggs are laid in clusters upon the leaves, and in a very short time hatch, and the young worms go to work immediately on the parenchyma of the leaf, only leaving the midrib and principal veins; though, when their numbers are comparatively few, they only eat out the leaf in spots, as in the annexed cut. The larvæ are yellowish worms, half an inch in length, marked on each segment with a double row of black spots. They are clothed with short hairs, and the head and legs are black. When they have attained their full size they descend from the tree, not by means of silken threads, as is the case with the canker-worm which injures the elm in the North, but by crawling down the trunk to the ground, where their transformations are completed just at the surface, and at no great distance from the body of the tree. The insect remains in the pupa state but five days, and then changes to the perfect insect, and is ready for new depredations, and to deposit its eggs for future generations. The mature beetle is of a dirty yellow color, and somewhat resembles the cucumber beetle in size and markings.

As the insects lie helplessly on the surface of the ground in the pupa state, this is the best time to destroy them, although it has been recommended to syringe the trees infested with tobacco water, while the worms are yet feeding. But the best plan we have seen is mentioned in a late Report of Agriculture, as follows:

Each tree is encased in a box, a foot or more in height, the lower part of which is sunk a few inches into the ground, the earth inside is levelled and hardened, or covered with cement, and to the top of the box is fastened a piece of tin sloping inwards, thus, ⊤. The theory is, that the worms, on

crawling down from the tree, are prevented from getting out of the enclosure, and are, therefore, obliged to make up on the hard surface, where they may easily be killed each morning. In place of the pieces of tin, the inside of the box may be smeared with tar, or some other sticky substance, with the same effect.

A Useful Implement.

A very convenient and useful "farm implement," if we may so term it, is the insect net, which may be used very successfully in keeping in check many of the insect enemies of the farm, and especially destructive beetles, where they appear in large numbers, the "rose bug," for example. By its use many destructive species of butterflies and moths may be captured and killed, before they have had time to deposit their eggs; a work in which even the children would engage, especially if a small bounty were offered.

To make such a net, a piece of $\frac{1}{8}$ inch brass, or elastic iron wire 40 or 45 inches long, is bent in the form of a circle, the two ends are then bent at right angles from the ring thus formed, and soldered together, forming a kind of handle, which is to be inserted into a socket of tin or brass, or it may be driven directly into the end of the rod, which should be four of five feet long, and as light as possible. To this ring is fastened a bag, made of some light but strong material, (musquito netting will do for a butterfly net,) twice the diameter of the ring in depth.

We give an illustration in the accompanying figure of such a net, with one or two additions, however (after Glover). The net is double, the upper net—see dotted lines—terminating in a tin tube, through which the insects pass into the one below, the bottom of which is open, but kept tied with a string when in use. As will be plainly seen, this net will not do for butterflies, but for beetles, plant-bugs, and the like, it is a very convenient arrangement, as the insects cannot fly out when captured.

Plusia Brassicæ.

This is the name of the "green worm" which is so destructive to the cabbage in the South, and as it is the only species we have yet received from correspondents, we infer it is the one most commonly complained of, although the larvæ of *Pieris protodice*, Boisd., is regarded as the Southern cabbage worm. As before mentioned, the worm loops in moving about, after the manner of the span worms, which at once distinguishes it from the *Pieris* in the larval state. In the perfect state the *Plusia* is not a butterfly, but, according to Riley, who a few years ago gave us its description, is a moth "of a dark smoky-gray color, inclining to brown, variegated with light grayish-brown, and marked in the middle of each front wing with a small oval spot

and a somewhat U-shaped silvery white mark. The male is distinguished from the female by a large tuft of golden hairs, covering a few black ones, which springs from each side of his abdomen towards the tip." The pupa varies from yellowish green to brown, and makes up in a very loose cocoon or web of silk.

The insect was described, and figured in all its stages, sixteen years ago, in the Patent Office Reports, as destructive to the flowers of the cotton plant; and it is strange that it has only just been described in Missouri, where it is quite as destructive to the cabbage plant as in the South.

Department of Labor and Immigration.

The Labor Question in Louisiana.

A LETTER TO COLONEL D. WYATT AIKEN.

Dear Sir: I wrote you a few weeks ago, stating some reasons why the large sugar planter could not succeed with negro labor, it being so very unreliable and so thoroughly regardless of the interests of the plantation. Now I am very sure if the planters would take the same trouble, and go to no more expense to obtain the services of white men, and make them comfortable, the returns of the plantation would be satisfactory.

I have known planters to send miles from home, and haul families of eight or ten in number, to secure (as they vainly suppose) the services of one man. Sometimes transportation is furnished by steamer. Here the planter goes to terrible expense and trouble to introduce eight or ten negroes on his plantation, knowing that but one of that family will even pretend to work, (and very often it is but a pretence.) The one man of the family, working not more than one half of his time, cannot support this large family. They must live; they do live by stealing, plundering in every way, burning fences and otherwise damaging the plantation.

Passing by a neighboring plantation a few weeks ago, I noticed the uncommon nice condition of the field which had just been planted in sugar-cane. I was, also, aware of the very heavy expense of getting things in that beautiful condition. In this field I saw a strong woman, a girl of about sixteen and four or five children, of from five to ten years old, *all* very busy; the woman and girl digging up the seed cane that had been planted the day before, and the children toting it off at a merry pace. This family (operating so very industriously) was, no doubt, one which cost much trouble and money to transport and locate on this plantation, which they were employing themselves in damaging. You must understand that the plantation was not damaged to the extent of the next crop only, but for four or five crops. On this very plantation large numbers of white men are employed from time to time throughout the year. But when white men are engaged their wives and children are not allowed on the plantation. The white man

has to board his family in the city, or provide a shelter for them other than on the plantation on which he is at work. Does not the planter give the negro greatly the advantage of the white man?

I have heard planters complain that the white labor is not much more trustworthy than black. This is easily explained. Most of the large planters will not have white men on their plantations if negroes are to be had, (always giving the preference to the negroes.) At such times as is necessary, an order is sent to the city for white labor, (only such as will leave their families.) Any number of stragglers may be picked up on the levee at the shortest notice; men who are as well off here to-day, as they would be anywhere to-morrow. They work a few days and are off, with the everlasting complaint of "*The Grub.*"

Now let the planters get them with families, and give them the same chance as is allowed the negro family. A good cabin, a garden spot, with the privilege of raising as much poultry as they please, with a hog or two in a pen; (and, as is the case on some plantations,) horses, cows, etc., are allowed. And, further, I know of one plantation on the lower coast, on which over $4,000 (four thousand dollars) were paid to the negro laborers for corn they made for themselves, *independently* of their monthly wages *paid regularly*. Several of the laborers received over $100 each for their crop of corn.

The facts are, the negroes claim and get everything, (and much more than was ever granted to laborers in any part of the world,) and are *given* many of the advantages which belonged to a well regulated old time slave plantation. And yet the negroes are not satisfied.

A change in the system of labor is necessary for the success of the large sugar planters of this State. That which I think most likely to succeed, is a system of tenantry. Get the best *white* laborers (in families) from any country in Europe. Divide off the large plantations in lots of twenty to eighty, or one hundred acres, (according to capacity of family.) Rent these lots for a portion of the cane. The planter having mules, carts, etc., will let out the same to the tenant. Require each tenant to plant a certain portion of lot in corn and peas each year, and set the same in plant cane, so as to have the lot always supplied with plant cane, and first and second year stubble. The land owner will buy the crops of his tenants, (after the rent is collected.) He can always get good sugar-house hands from the city when required. The draining machine (if any is required on the place) must be worked by the land-owner. With such a system carried out in a reasonable manner, the white man will cultivate the cane crops of the State, and the splendid estates now in ruins will be made to pay and appear more beautiful than ever before. With the white man to have his wife or daughter to cook, we will hear no more of "Bad Grub," and the passer-by will not be horrified at seeing newly planted seed cane rooted up, and carried off by that element which the planter has been at such trouble and expense in introducing and keeping on his plantation.

Louisiana, March 15, 1871. F. W. J.

How to Encourage Immigration.

I very much regret to learn from the address to the German Society of Charleston, that the Society has been called upon to assist German emigrants to Newberry to get off to Walhalla, in the upper part of the State, or to leave the State altogether for the West. When I left home, a year and a half ago, I hoped that the land-owners in Newberry had their eyes sufficiently opened to the necessity of introducing intelligent and skilled labor from abroad to have caused them to make the little nucleus of Germans they had received contented at any hazard, as an inducement to others to follow. But it seems, from this report, that I was mistaken. Our land owners have yet to learn, what it seems ought to be manifest to the most short-sighted, that if we would encourage emigration we must give the emigrant an opportunity of bettering his condition. It is the height of folly to suppose that Germans, or any other class of emigrants will leave their old homes, and friends, and all that is dear to them, and be content to settle down in South Carolina as day laborers, and live on bacon and corn bread. Everybody makes loud professions of being very anxious to induce emigrants to come into our State. If we really desire it, we must offer opportunities for procuring land and permanent homes to those who come.

This brings me to one of the suggestions I desire to make. It is that it would be a profitable investment to all our large land-owners to divide their lands into small tracts and actually give away, or sell at very low prices, alternate tracts to permanent settlers from the North or from Europe. I have no doubt, if we could increase the population of South Carolina, within the next five or ten years, twenty to thirty per cent., with industrious emigrants, that the prices of our lands would be enhanced to more than double their present value. Would not our land-owners in this way be more than compensated for giving twenty to thirty per cent. of their lands? We ought to have an immigration society in every county, with an energetic central society in Charleston. Our planters should subscribe alternate sections of their lands to the society, and fix conditions, one of which should be fixed residence for, at any rate, a number of years, on the part of the emigrant to to whom it was given or sold. Some arrangement should be made to facilitate the procuring of supplies at reasonable rates for the first few months. With such inducements, I believe we could get emigrants in large numbers. I believe intelligent Northerners and Europeans would settle among us permanently, be contented and prosperous, and in a few years relieve us of most of the terrible evils we are now suffering from.

I have a special reason for offering these suggestions at the present time. Peace is concluded between Germany and France. The history of emigration to the United States shows that it is always greatest for the two, three or four years after a great war. The wars of '48–'49 sent us the heavy emigration of '50–'54. The great war of '66 sent us the hundreds of thousands of Germans of the last three years. The great war of '70 will

send us hundreds of thousands more for the next five years. Shall not we of the South make some effort to profit by it? I am well aware that the tide of German emigration flows so strongly to the westward that it is difficult to turn its course or even to snatch individuals from the current. But two populous and highly enlightened provinces are being torn violently from France, against the almost unanimous sentiments of the people. Emigration will most likely be heaviest, for the next few years, from Alsace and Lorraine, and they will rather avoid than seek the German current. Besides, they will naturally seek a more Southern climate. Here seems to me to be a chance for Virginia and the Carolinas, Kentucky and Tennessee, that ought not to be lost. Emigrants from those provinces would be all we could desire. They would be cultivators of the soil, wine-growers, tobacco-growers, manufacturers, etc., all that we need to make our State prosperous. They would have all the industry and thrift of the German, but would suit us much better on account of the climate. I trust some earnest effort will be made to profit by this opportunity. But I would repeat, and urge it upon every one, that all will be useless unless we can offer the emigrants reasonable facilities for procuring permanent homes. B. O. D.

Savings Banks.

Savings Banks, like Life Insurance, may be classed amongst the many beneficent and conservative institutions which modern civilization has created for the benefit of the industrious poor. The importance of such institutions can hardly be over estimated. They are valued alike by the philanthropist and the statesman as noble creations of the present century whose influence for good, reaches those who could be reached in no other way; and as they make tens of thousands of people industrious and thrifty, they give increased stability to Government by increasing the number of conservative people; for, as the individual saves money, acquires property, and becomes independent he is sure to become conservative and law-abiding. It is not our purpose to write any long or learned article on this subject, but simply to call attention to the importance of Savings Banks even to an agricultural people, and to show what is being done in South Carolina to encourage the laboring man to save his money, and place it at interest till he is able to put it into such other investments as he may desire.

The old Charleston Savings Institution was the largest corporation of this kind in this part of the South, and had on hand when the late civil war began $2.500,000. It carried its funds through the struggle better than most individuals did their own property, but, nevertheless, it was forced, most unwisely, we think, to wind up its affairs, and has paid in cash to its depositors 30 per cent. of all they ever put in; which is a larger per centage than any other Bank in this State has been able to pay its stockholders. It is succeeded here by the Freedman's National Savings and Trust Company, which holds a

charter from the General Government, is ably conducted, has many branch establishments in other cities of the South, as well as in the North and West, and, we are informed by Mr. Nathan Ritter, the gentlemanly and obliging manager in this city, is doing a large and safe business, and that the deposits in the Charleston Branch is very large. We wish this institution all success, for its depositors are chiefly the industrious and frugal amongst the colored people, most of whom were once bound to the Southern people by ties which must ever make us feel an interest in their welfare.

The South Carolina Loan and Trust Company, with the well known banker, George S. Cameron, as its President, also make a savings department an important feature of their large and constantly increasing business.

We think we may safely say, however, that *the* institution of this kind in this State is the Citizens' Savings Bank, which has its main office in Columbia, and Branch Banks in Charleston, Abbeville, Camden, Laurens, Newberry, Spartanburg, Sumter and Yorkville, and are thus enabled to reach all who may wish to deposit with them. It was chartered in 1869 by the General Assembly of the State, and commenced operations in March of that year, with South Carolina's most honored son as its President. Wade Hampton's name alone would have commanded the respect and confidence of our people, but along with him were associated a large number of the best men of the State, and it is not surprising that with such a start, an institution so much needed by the people should have met with unexampled success. When Gen. Hampton's large planting interest in the West obliged him to resign the presidency, he was succeeded by the Rev. William Martin, whose name commands the confidence alike of the rich and the poor, from the sea-board to the Blue Ridge, and under whose direction the Bank has constantly been increasing and widening its influences for good.

We can not give space to details about any of these corporations, but will say that we believe that they are all solvent and reliable, and are, indeed, so hedged in by their very strict charters that it can hardly be otherwise ; and as well managed, solvent institutions, we commend them to our readers, hoping that many of them will be induced to save their earnings, and instead of hoarding them up as people used to do in the olden time, to deposit them where they will be earning interest for them, and can be used to facilitate the business of the country by the Bank's loaning out these tens of thousands of small sums to those who wish to borrow.

To those who may think this to be an unimportant subject, we would say that the thrifty laboring people of New England have on deposit in Savings Banks the enormous sum of four hundred millions of dollars, nearly all of which has been accumulated during the present generation. A large part of this great aggregation, from millions of small deposits, have gone to foster the building and sustaining of the great manufacturing interest of this thriving and wealthy country, and thus not only earns interest for the depositor, but gives employment to the laborer. Let us encourage such institutions in the South by all the means in our power.

THE RURAL CAROLINIAN.

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"Progress with Prudence, Practice with Science."

D. H. JACQUES, Editor.

TRUCK FARMING.

We have watched with great interest the gradual development of this branch of agriculture in our vicinity. Our truck farmers or market gardeners have labored under many disadvantages, not the least of which has been a lack of the necessary training in the practical details of their business, most of them having entered upon it since the war with everything to learn in the costly school of experience. That they should fall into many expensive mistakes and make some ruinous failures is not strange; but we have had faith that the business is a good one and that when conducted, as all successful business must be, with energy, perseverance, industry and skill, it will pay well. The result justifies our faith. Our friends on the "Neck" have overcome, one by one, most of the obstacles by which they were surrounded. Experience has given them knowledge and skill; their failures have taught them caution and watchfulness; and their energy, perseverance and industry have been crowned with deserved success. Of course we are speaking of them in general terms, and as a class. All have not been successful. There are failures in every branch of business and from various causes; but truck farming near Charleston is now an established industry and when properly conducted a profitable one.

The present season has been uncommonly favorable, in this vicinity, for most of the crops generally grown by truckers, and with good prices, their profits have been larger that can be counted upon as a rule, but they may well be content with a little less as an average for a series of years.

The Irish potato crop has been a particularly good and profitable one this season. We are told that on one farm an area of ten acres yielded 1,050 bbls., which sold at an average of $5 per barrel, amounting to $5,250 for the ten acres. Others, have no doubt, done equally well, if not better, and all the land planted in Irish potatoes is made to produce a second crop—sweet potatoes, corn or something else. One of the most prominent of the Charleston Neck farmers is said to have realized $15,000 for his potato crop alone, and he cultivates in all crops not more than forty acres, and grows peas, beans, cucumbers, tomatoes, onions, cabbages and other vegetables quite largely. We believe that the aggregate value of the Irish potato crop of Charleston County, the present season, can not be less than $200,000.

We do not adduce these facts for the purpose of encouraging everybody who may desire to better his fortune to rush into market gardening, but to indicate one of the ways in which persons, properly fitted for the business and favorably located, may turn their energy, industry and skill to a profitable account.

AMERICAN POMOLOGICAL SOCIETY.

The next meeting, as we have stated in a previous notice, will be held in the City of Richmond, Virginia, on the 6th, 7th and 8th days of September, 1871. All Horticultural, Pomological, Agricultural, and other kindred institutions in the United States and British Provinces, are invited to send delegations, as large as they may deem expedient, and all other persons interested in the cultivation of fruits are invited to be present and take seats in the Convention.

Circulars may be had by addressing Hon. Marshall P. Wilder, President, Boston, Mass., or F. R. Elliott, Secretary, Cleveland, Ohio. The meeting will be one of special interest to Southern fruit growers, and it is hoped they will contribute largely to its success by their presence and contributions.

Among the premiums, the following will be of special interest to many of our readers:

Gen. R. L. Page, Norfolk, Va., offers Ten

Dollars or a Medal for best half bushel of the Flowers Grape.

G. F. B. Leighton, Norfolk, Va., offers Twenty Dollars or a Medal, at the disposition of the American Pomological Society.

C. D. Barbot, Norfolk, Va., offers Twenty Dollars or a Medal for best dozen bottles of Scuppernong Wine.

W. H. C. Lovett, Norfolk, Va., offers Ten Dollars or a Medal for best Dried Figs, cured within the territory of the Society.

Hon. Jno. B. Whitehead, Norfolk, Va., offers Twenty Dollars or a Medal for best half bushel of Scuppernong Grapes.

Messrs. Walker, Evans & Cogswell, offer one year's subscription to THE RURAL CAROLINIAN for each of the following: 1. The best show of Apples, not less than ten varieties, grown south of Virginia. 2. The best show of Yellow Horse Apples. 3. The best show of Meigs Apples. 4. The best show of Buff Apples. 5. The best show of Batchelor Apples. 6. The best show of Nickajack Apples. 7. The best show of Chestatee Apples. 8. The best show of late Peaches, grown south of Virginia. 9. The best show of Hebe 11. The best show of Louise Bonne de Jersey Pears. 10. The best show of Bartlett Pears. Pears. 12. The best show of Duchesse d' Angoulême Pears. 13. The best show of Seckel Pears. 14. The best collection of Figs, not less than six varieties. 15. The best box of dried Figs, cured in the South. 16. The best plate of Celestial or Sugar Figs. 17. The best plate of Pomegranates. 18. The best show of Running Mangoes, (*Sechium edulis.*) 19. The best jar of Pickled Olives, grown and prepared in the South. 20. The best new Seedling Grape, originated in the South, and not before exhibited.

THE STATE FAIR.

Col. D. Wyatt Aiken, Secretary of the South Carolina State Agricultural and Mechanical Society, announces that the third Annual Fair of the Society will open at Columbia on the 6th of November, and continue during the week. For a premium list containing the rules and regulations, a complete programme for the week, address the Secretary at Cokesbury, S. C.

Let every farmer make up his mind to help in such way as he best can to make our next Fair the grandest success of all, and the most *profitable* to the agricultural community. It is the farmers' and mechanics' institution. Let them see to it that it be not given up to shopkeepers, speculators and sportsmen—that it be made something more than a raree-show, an exhibition of fast horses, or an advertising medium for dealers in fancy goods. Farmers and mechanics, claim your places at your own Fair, and *see that they are well and appropriately filled*, or else others will fill them less fittingly, and with few thanks and no profit to you.

HINTS TO WRITERS.

When you have nothing to say, say nothing; but if you really have thoughts or facts that you think will interest or improve the reader, sit down and put them upon paper in a straightforward business-like way, and in the best language you can command. Do not write *around* your subject, but grapple with it at once. Newspapers and magazines have no room for long introductions or prolix preliminaries.

After you have written out carefully what you have thought it necessary to say, read the article over and strike out every word and sentence that does not bear upon the subject, and every useless adjective or ineffective repetition of an idea. When you can prune and condense no more, make a fair copy, writing on only one side of your paper, and send it to the editor; and do not get angry or feel hurt if he do not print it, after all, for, however good, it may not be suited to his purposes, or he may not have room. He will, at least, thank you in his heart for not boring him with a mass of crude verbosity.

In the title page of *The Southern Gardener* the prefix of *Dr.* is given to the author, Mr. Henry W. Ravenel, of Aiken, S. C. We beg to state that Mr. R. lays no claim to the title, and he did not see the proof sheet of this page. The prefix was given by Mr. C. Irvine Walker, who arranged the title page. Mr. C. I. W. thought *then* that Mr. R. was legally entitled to the honor, as he *now* thinks that his scientific attainments and abilities entitle him not only to this, but still greater distinctions. We take this means of correcting the mistake at Mr. Ravenel's suggestion.

PRACTICAL IDEAS.

The following extracts from the letter of a friend are well worthy of publication :

"I have thirty acres of cotton heavily manured with cotton seed, composted with acid phosphate from the Etiwan works. The seed were deposited in a deep furrow and a ridge thrown upon them with bull-tongues. I then scattered over these ridges 130 lbs. per acre of Etiwan No 2. The crop, though not a perfect stand, is really a pretty one. I think, however, the Etiwan is doing all the work, as three rows manured alone with compost are poor compared to the rest of the field. Where the compost heap stood, I expected to see the cotton grow too large, but to my surprise it is the smallest in the field."

This result is similar to mine this year with the acid phosphate. I composted a ton with cotton seed and applied it to corn on old land. I can see but little evidence of its worth to that crop. The above field of cotton I saw on the 30th June, and pronounced it "good for thirty bales."

This same friend writes:

"I am in for that Merino importation. I am now thoroughly convinced, that we have in South Carolina one of the best sheep countries in the cotton belt; and the more sheep we have the more of everything else we can raise, if the manure is properly husbanded. My flock averaged over five pounds to the fleece, and two-thirds of them were ewes suckling lambs. For the past two years I have lost lambs, dropped in December and January and frozen to death. This year I will have them come in October and November."

* * * "I sowed last fall five acres of cotton land in clover with barley, and have a fine set. The ridges will be in my way in mowing, but I will obviate that next winter by ploughing them down with bull-tongues and following with the roller. Where I planted cotton on clover land last year and in the fall seeded it in wheat I have a fair set, but better where I sowed rye than any other grain. My stubble that was in oats this year was in cotton last year. I propose to run a bull-tongue under the ridges in August, and one in the water furrow, and then drag a four-horse harrow across it. I am not pasturing this land, hence will save the seed."

"I intend to sow near three hundred acres in small grain this fall, though cotton goes over 25 cts. per lb. Next year we are to have all the elections, and I for one will give the yeomanry of the land a good opportunity to attend to political affairs. I cannot submit to be harrassed by political employees."

"I am having some beautiful calves dropped—the get of the little Ayreshire I got from you, as scrawny and as ugly as he looks. When we curtail our planting area, and manure our lands with sheep, so that an acre will produce as much as ten does now, we will begin to prosper and not before. I have set my pegs for an addition of over 500 sheep to my present flock in the next two years."

D. W. A.

RESIGNATION OF MR. CAPRON.

Hon. Horace Capron, the late able and much respected Commissioner of Agriculture, has resigned his position and is about to sail for Asia, having entered into a contract with the Japanese Government, through the Commission sent to this country, for the purpose of introducing into Japan the industrial ideas of American civilization. He is empowered to introduce models of agricultural and industrial machinery, even to the appliances of railroading. He will take with him a geologist, civil engineer, and other members of a corps of scientific and industrial investigators. The mission of General Capron tends to still more extensive operations in the future, and is regarded by the President and Cabinet as of very great importance, both to the United States and to Japan.

We are sorry the country must lose Mr. Capron's services in a position in which he has proved himself so capable and efficient, but trust that what now seems a misfortune to the nation will prove in the end a grand benefit, through the increased intercourse and trade with Japan which is likely to result from his mission.

IS "HIGH FARMING" A FAILURE?

We do not believe that it is, and we call attention to Dr. Pendleton's article on "Land or Labor," in our present issue, to express our dissent from the conclusions arrived at by the author, who is one of our most valued contributors, and a writer whose opinions will carry great weight with our readers. We are sorry that he should even *seem* to be taking a step backward or to discourage advance. The high price of land in Europe is in part the result of high culture, the former again reacting upon the latter; and in this country, *one* of the causes of the cheapness of our land is the slovenly system of farming that so generally prevails. The profits of farming should largely consist in the increased value given to the farm, and high farming alone gives this increased value.

FARM AND GARDEN NOTES.

Fall Crops in the Garden.

In this climate, the garden should never be without its growing crops, and, for many of them, the autumn furnishes conditions as favorable to growth as the spring. The only real difficulty in the way of producing them lies in the fact that some of them require to be planted in August, when heat and drouth often prevent our getting a stand in the ordinary way. We must take a little extra trouble, shading the hills or rows with bushes or boards, and must not allow ourselves to become discouraged if, after all, we are obliged to replant several times. If we persevere, the crops thus ensured will well repay us. Take advantage of rainy and cloudy weather to transplant cabbages and kohl rabi, and sow seeds just before a shower, or as soon after it as the condition of the soil will permit. Snap beans and sugar corn should not be lacking till frost, and the former may be planted in this latitude as late as the first of September with good hope of a crop.

Manuring Seeds.

Some agricultural writers have lately broached the theory that the best way to promote the growth of plants is to *manure the seeds* instead of the soil. If we amend it by substituting "and" for "instead of" we think the proposition a good one for very general application. Manuring seeds gives the plants an early and rapid start, which is often of the utmost importance, and with sufficient manure in the soil for their after sustenance, the growth is continuous and thrifty. We purpose to give in a future number some instructions in the process of coating the seeds with the manures recommended for that purpose.

Hale's Early Peach.

There are a few varieties of the different species of fruits that succeed well everywhere, or nearly everywhere, but there are numerous other kinds that are suited only to limited ranges of country or to particular soils. Hale's Early Peach seems to be of the latter class. At the North, where it originated, it is generally reported as a failure. It is so in some portions of the South. In Tennessee, Middle Alabama, Georgia and South Carolina, we believe it has generally done well, and, being the earliest good peach, is a great favorite.

Buckwheat for the South.

We have too little experience with this crop to express any decided opinion in regard to its adaptability to our climate and soils, but a small experiment once tried with it seemed to indicate that it might be grown here with profit. It grows quickly and will grow on poor land, drawing largely on the atmosphere for its sustenance. It should be sown in August, about a bushel of seed to the acre. Great caution must be observed in harvesting this crop. The quality of the flour depends mainly in getting the grain in perfectly dry. Never on any account stack it or put it into the barn. Cut when the dew is off, and put up in small shocks without tying; watch the weather closely, and as soon as a dry, breezy day occurs, haul in and thrash out. Clean up *immediately* after thrashing, and spread the grain on the barn floor, turning over a few times, and allowing the drying winds free access to it. Besides its use for flour making, it is excellent food for poultry.

Imported Stock.

A letter from R. H. Allen & Co., informs us that the imported stock, mentioned in our last as shipped from London to that firm, arrived in safety, and that half had already been disposed of. As there is so much fraud and humbug connected with the sale of stock, and Southern buyers are so frequently made the victims of irresponsible and dishonest parties, we take occasion to say here that R. H. Allen & Co. are well known, trustworthy and honorable dealers, and we say this for the benefit of our readers, and not to gratuitously advertise the gentlemen in question, who are abundantly able to pay for any space they may require for advertising purposes in the proper department, with which we, as editor, have nothing whatever to do.

Cultivating Brains.

Dickens once said that "the part of the holding of a farmer or land owner which pays best for cultivation, is the small estate within the ring fence of his skull. Let him begin with the right tillage of his brains, and it shall be well with his grains, roots, herbage and forage, sheep and cattle; they shall thrive, and he shall thrive.

Good Words for the Donkey.

This useful little animal is employed in Europe in various ways to great advantage; his introduction into the general field of labor is one of the things we have yet to learn. His appetite is easily satisfied, requiring less than a large dog; his labor even as a burden-carrier would well repay his importation; he pulls well in a small cart, and in this is most useful in cities to carry marketing. He would take the whole produce of a small kitchen garden as well as a horse, while his maintenance would be a very trifle.

The Barometer.

The *Rural Messenger* urges farmers to provide themselves with barometers, and truly says:

They are men most particularly interested in the weather. Their interests are more or less affected by every change. Not unfrequently, when work is pressing, they feel at a loss how to regulate their movements. If they were sure of fair weather, they could go ahead without fear; if they could foresee rain, they would turn their attention to the preservation of some crop likely to suffer by exposure. It would be found a convenience and a benefit in a hundred ways. The farmers of England are never without a barometer. It is indispensable to the planters in tropical climates.

Raising Seed Corn.

A Tennessee farmer, after making the best selection of seed possible to begin with, plants it separately from his general crop, and just before the silk appears, cuts off all the tassels from those stalks having but one ear. He thus secures exclusive fertilization from stalks bearing two ears, and the result is highly satisfactory.

The Vetch as a Forage Plant.

Dr. H. R. Casey, the correspondent of the Department of Agriculture, for Columbia County, Georgia, writes that last winter he sowed in his garden a pint of vetch seed, procured in France, as an experiment. On the 11th of June it had produced a beautiful bed of green forage, over a foot high and very thickly matted. The opinion is expressed by the correspondent that the plant will make good green pasturage, but will possess more value as dry forage. The yield on good ground, he thinks, would be heavy. The vetch (*Vicia sativa*) is much esteemed in Europe. It is widely naturalized here, and might, no doubt, be turned to good account.

SCIENTIFIC NOTES.

The American Pitcher Plant (*Darlingtonia Californica*) has an unexplained and irresistible attraction to insects, which it destroys in large numbers. When in bloom the flower is said to resemble the upraised head and body of the cobra, with mouth expanded, and prepared for a spring, the head being at right angles with the hollow, vertical body, and apparently presenting no opening by which an insect can enter. Blue-bottles or blow flies are said to make their way immediately to this plant whenever they come into a room where it is growing, and alighting on a portion of the flower, they fly upward into the previously unseen entrance to the tube, and from this they descend the hollow body, and apparently never return alive, keeping up a buzzing noise for half an hour and then dying. This cavity of the plant soon becomes entirely filled with dead flies, so that, as a consequence, the walls decay and the insects drop out.

——In the case of a recent accidental drowning, in the Hackensack river, N. J., several persons made attempts to recover the body, but without success. A French Canadian, named Busche, then undertook the job, and is reported to have proceeded after the following scientific manner. Having supplied himself with some glass gallon jars and a quantity of unslacked lime, he went in a boat to the place where the man was seen to go down. One of the jars was filled half full of lime, then filled up with water and tightly corked. It was then dropped into the water, and soon after exploded at the bottom of the river with a loud report. After the third trial, each time in a different place, the body arose to the surface and was secured.

——There can be no doubt that bright red and yellow rays stimulate, and in some cases irritate, the brain and mind. Deep blue is said to depress or exhaust the vital force. Some animals are excited when brought in contact with scarlet color. This may be observed at the bull-fights that take place in different parts of Spain, and the effect of the same color upon a turkey-cock is familiar enough to Americans. Green, violet, and, in fact, all the neutral tints, soothe the nervous system, and allay mental irritation.

——A French chemist asserts that if tea

be ground like coffee before hot water is poured upon it, it will yield nearly double the amount of its exhilarating qualities. Another writer says: "If you put a piece of lump sugar, the size of a walnut, into a teapot, you will make the tea infuse in half the time." Persons who have tried this last experiment say that the result is satisfactory.

——To remove ink spots, put the article stained over a warm flat-iron, stretch it well, then squeeze a few drops of lemon juice on it, and the spot will disappear at once. Wash immediately in cold water.

MERE MENTION.

The steam plough has been introduced into Spain—a country generally named as the type of old fogyism—and is found to pay, although the coals used in running the engine are imported from England. Is it not about time for us to move in the matter?

——Prof. Frederick Watts, of Pennsylvania, has been appointed Commissioner of Agriculture in the place of Hon. Horace Capron, resigned.

——Rusticus, in commenting upon the present style of female *coiffure*, says it must be a very poor soil indeed that requires so much top-dressing.

——The sumac harvest promises to be a very fine and heavy one this season, especially in Virginia. The proper time to gather sumac is from July the first until the first frost, after which it turns red and becomes worthless.

——The plantation of the "Southern Ramie Culture Association," is said by *La Renaissance Louisianaise* to be in a flourishing condition, and the prospects good for the establishment of a new and important industry.

——The lumber mills in the vicinity of Pensacola, Florida, turn out daily half a million feet of sawed lumber.

——To do a piece of work just at the proper time, will make the farmer richer than the dilatory man ever dreamed of. So also, the old adage, "a stitch in time saves nine," was never half appreciated.

——A friend in Asheville, N. C., writes that a company has been formed to take from forty to fifty of the Angora bucks imported by Mr. Entychides. Increased attention is being given to the breeding of these goats.

——The cultivation of cotton and tobacco has been introduced into some of the Italian provinces, and the most satisfactory results have been obtained.

——Sulphur beds of great extent, remarkable purity, and apparently of immense value, were discovered accidentally, some three years ago, in the parish of Calcasieu, southeastern corner of Louisiana. They are being rapidly developed by the American Sulphur Mining Company, of New Orleans.

——The annual consumption of sugar in the United States exceeds 500,000 tons.

MAGAZINES AND PAMPHLETS.

Messrs. Walker, Evans & Cogswell, Charleston, S. C., have issued, in handsome style and convenient form, a useful little work by Mr. H. W. Ravenel, entitled "The Southern Gardener." It is not a compilation, like many other works on gardening, but an original manual of short and simple directions for the culture of vegetables and fruits at the South, based on the actual experience of the author, who has been accustomed to do, from year to year, and with success, just what he now instructs others how to do. He gives practical directions, not untried theories; and what he has here laid down on paper, can be carried out in the soil. Price 50 cents. Address the Publishers.

—— Bret Harte contributes to the *Atlantic Monthly*, for July, a prose article entitled "The Poet of Sierra Flat"—full of humor and the best thing in the number. "Sapho," by Col. T. W. Higginson, is a very readable paper on the old poetess of love and languishing. "Kate Beaumont," and "From Generation to Generation," both good stories, are continued, as is Clarence King's "Mountaineering in Sierra Nevada." Boston, Jas R. Osgood & Co. $4 a year.

——*The Patent Right Gazette* is a new journal of invention and mechanics published by the Inventor's Exhibition and Patent Right Association at $1 a year. Address the Publishers, at 12 Warren street, New York.

——*Good Health* is a popular monthly magazine, the special object of which is giving lessons of correct living, as developed by science. It is a useful work. Alexander Moore, Boston, Mass. $2 a year.

——The "Transactions of the State Agricultural Association, of Georgia, for 1869–'70," make a solid and valuable pamphlet of nearly 200 pages. It contains essays that are worth more to the farmer than a book-case full of "light reading." Published by J. W. Burke & Co., Macon, Ga.

——Among the most noteworthy articles in *Scribner's Monthly* for August are "What they are doing at Vassar," an illustrated description of Vassar College; "An American Art Museum," also illustrated; and the continuation of "Wilfred Cumbermede." *Scribner's Monthly* keeps well up to its high standard, so far. Scribner & Co., New York. $3 a year.

——"How dem Frenchmen tek dat Berlin," by Johan Schlemeel, is a Hans Brietmannish poem, with something of Hans Brietmann's humor, issued by the American News Company, New York. Price 25 cents.

——*Appleton's Journal's* lately (No. 120) had an interesting illustrated article on Charleston—graphic, candid, and genial; and the number for July 22d (No. 121) contains the opening chapters of a new novel, entitled "Good-bye, Sweetheart." This story is by the author of "Red as a Rose is She," one of the most brilliant of recent novels, which last year was the sensation among readers of fiction. Weekly; D. Appleton & Co., New York. $4 a year.

——*Texanisch Farmer Zeitung* is a monthly journal of agricultural information pulished in the German language at San Antonio, Texas, by A. Siemering & Co. $2 a year.

FAIRS AND PREMIUM LISTS.

South Carolina State Agricultural and Mechanical Society Fair, at Columbia, Nov. 6—11. For Premium List, address Colonel D. Wyatt Aiken, Secretary, Cokesbury, S. C.

——Cotton States' Mechanics' and Agricultural Fair Association. Augusta, Ga., October 31st—November 4th. For Premium List, address E. H. Gray, Secretary, Augusta, Ga.

——Planters' Manufacturers' and Mechanics' Association of Mississippi. Jackson, Miss., October 23d to 28th. Address J. L. Power, Secretary, Jackson, Miss.

——The Cherokee County Fair Association for Georgia and Alabama. Rome, Ga., October 10th—14th. Address B. F. Jones, Secretary, Rome, Ga. Agricultural magazines and papers are offered as premiums—a good idea which all such Associations should adopt.

——Alabama Agricultural and Mechanical Association. Montgomery, Ala., October 16th—20th. Address Hal. T. Walker, Montgomery. Ala.

——Georgia State Agricultural Society, Macon, Ga., October 23d. Address D. W. Lewis, Secretary, Macon, Ga.

——Atlanta Agricultural and Industrial Association. Atlanta, Ga., October 16th—20th. Address Samuel A. Echols, Secretary, Atlanta, Ga.

Additions will be made to this list as the necessary information is received.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

AIR TREATMENT OF WINE.

Editor of The Rural Carolinian:

Mr. L. G., on page 56, October number, 1870, inquires how to make Scuppernong wine without the addition of sugar. In February number, page 311, Mr. A. C. C. answers: "Any kind of wine can be made and fully matured in two months by using R. d'Heureuse's Patent Air Treatment." The reader of this is left to infer that he can take the Scuppernong, or any kind of grape juice, let it be ever so poor in saccharine matter, and simply by the Air Treatment, can make either a sweet, a dry, or "any kind of wine." This, indeed, is what Mr. C. says.

Now, admitting the utility of the Air Treatment, I do think that Mr. C. claims more for it than the patentee does. I have carefully read Mr. d'H.'s essays on Air Treatment, published in the Grape Culturist, and I think that he only claims to mature wine in a shorter time, and which will keep better, than under the ordinary process of making, and not that he can make, by the Air Treatment alone, from the same *must*, sweet or dry wine. Those skilled in wine making inform us that in unfavorable years and localities the grape is deficient; the *must* does not contain the proper requisitions, in proper quantities, for making a fine wine. At some locations a finer wine is made from the same grape than at others. So some years finer wine is made from the same grape, at

the same location, than on other years. And when this is the case, (that is, *must* deficient,) we are informed that we must improve the *must*. This is usually done by Gallizing. But one would infer, (for Mr. C. so teaches, or asserts,) that all this makes no difference, for he can make "any kind of wine" out of it; for he asserts that he even made wine from the "Muscadine that received the highest premiums at the Georgia and South Carolina State Fairs," by the Air Treatment. And I suppose that the G. S. F. does not err, in particular, when they award "premiums" for Prize Essays, the whole object of which (the Essays) being to advertise for the patentee. Mr. C. does not say that he added sugar to the *must* to do this, but did it by the *air treatment*. Now, I do not believe that Mr. C., nor any one else, can make "any kind of wine" out of the Scuppernong or the Muscadine by *Air Treatment* alone, or any other treatment, without the addition of sugar, which would come up to the standard of fine wine. I do not condemn Air Treatment. It may be of great utility in a quicker and thorough fermentation and early maturity, of which I have no doubt; but I do think that Mr. C.'s answer is calculated to lead astray.

J. M. WELBORN.

Covington, Ga.

HOW TO IMPROVE THE SOIL.

Editor of The Rural Carolinian:

The people began to talk corn, corn, this spring in time to put some of that land in corn, that it wouldn't pay to grow corn on when cotton was $100 per bale. Oats used to fall heir to all the poor knobs that would not produce cotton or corn, and that without a coat of cotton seed, and because they wouldn't grow high enough to cut with a scythe, they were not a paying crop. The kind of men that did this, never read an agricultural journal. If they had, they would have found out that oats would pay to feed horses, hogs, and to fatten the land, if they would feed the land with what grew on it three times in succession, (it seeding itself from the first crop with what would be left on the ground and turned under with peas). In the fall, when the peas are in bloom, sow on them either fall or spring oats and turn under again. By this method you may fatten your land and grow good crops of oats. Try it. Don't do as I do, but do as I tell you. Don't wait for a sulky plough. We are not ready for it until we get up all the stumps, and get all the gullies filled up. A good pair of mules or horses, a good plough turning and cutting ten inches, four to six inches deep, with twenty-five bushels of cotton seed or compost under it, seed on the top, oats or wheat, and with a good heavy harrow and yoke of steers pulverize well, and if you've never tried it you will be pleased with the result. This is the commencement of a routine that will produce, with one year's rest, healthy crops and remunerating ones, without a heavy outlay for commercial fertilizers, and at half the expense. Our lands, if ever improved, will have to be by a judicious rotation of crops, green crops turned under and rest; and while this improvement is going on you can keep on it your stock.

HENRY W. PARR.

Broad River, June 13, 1871.

HINTS ON RAMIE CULTURE.

Editor of The Rural Carolinian:

In the June number of THE RURAL CAROLINIAN, mention is made of a growth of ramie in Barnwell County. On the 15th of April, Mr. Duncan describes it as being three feet high. I was not aware that the ramie could be made to grow as far north as South Carolina.

Mr. D. thinks it may be grown to advantage as a forage crop. I hope and trust it will be found much more valuable for its splendid fibre.

Plants were sold in New Orleans last winter and spring at $50 (fifty dollars) per thousand. We estimate three inches of *root as a plant*. Two thousand five hundred of these, *well pressed* and closely packed, may be got into a flour barrel. Now the sprouts (or stalks) are easily converted into roots, which make the very best plants.

Plants have been sent from New Orleans to California, where a very extensive plantation is being established. The working of the ramie plant into fibre will be fully tested very soon now. What I desire in this communication is merely to call the attention of such of our friends in South Carolina and Georgia, (who *may* be so *fortunate* as to have a patch of ramie,) to the fact of the market price of the plants, and the demand for the article.

I would earnestly recommend that the stalks be converted into roots, and not fed to cattle. This can be done at very little trouble and expense, and the exercise of a little patience will be all I would ask at this time. In less than twelve months we shall know if ramie may, or may not be grown as a forage crop.

F. W. JOHNSTONE.

St. Gemme, La. July 13, 1871.

Ramie grows finely in Charleston and vicinity, where, no doubt, three crops a year could be cut, if it would pay to grow it. We wait with great interest for the *practical test* about to be made in New Orleans. Our correspondent fails to tell us how to convert ramie stalks into roots. Is it by making cuttings of them or by layering? We infer the latter. We presume they are to be bent

down and covered with earth, but Mr. Johnstone does not say so, and, perhaps, they grow from cuttings. We have not tried the experiment, but will now do so.

HILL-SIDE HEDGING.

Editor of The Rural Carolinian:

Your "Contributor," so highly endorsed by yourself, who complacently assumes the chair of *random reviewer* of agricultural, horticultural, botanical, hygrometrical—with a dash at the moral—and all and sundry scientific contributions to your journal, makes an assertion, which, if only for the sake of truth, demands notice.

Referring to the system of hill-side hedging, presented in an article in the June number of THE RURAL CAROLINIAN, (which is simply the substitution of a series of hedges, exactly horizontal, without ditches, for the now generally condemned and ruinous system of hill-side ditching,) he says:

"This used to be an old Monticello hobby, and was tried there fairly."

Will that gentleman please inform us when, and by whom was that system fairly tried in that vicinity, or anywhere else? Also, in what agricultural journal was the subject discussed, if any? I have before me many numbers of journals running a long way back; I am also, somewhat familiar with that locality! I have also made inquiry, without finding any traces or recollection of anything approximating the plan of horizontal hill-side hedges as a substitute for ditches! *And I am sorry for it! I would be glad to have found it.*

"Has the writer ever tried it?" he asks. Yes; and is fully satisfied of its efficiency, after the heaviest falls of rain seen here for years!

This objection, your contributor throws off in his hop-and-a-jump-go style, is rather commendatory of the plan in the eyes of any one who is familiar with this country, and is a fair judge! Native shrubbery will renew and furnish material to rebuild the hedges indefinitely. Mr. Brinly will take care of sprouts on the cultivated land. Sprouts are easily disposed of when they come in the way of an earnest working man.

— — —

Fairfield, July 4th, 1871.

MORE ABOUT HILL-SIDE HEDGING.

Editor of The Rural Carolinian:

It is said there is nothing new under the sun, but if this is not something new "I give it up." Hedges inside of a field! "and they may be near together." "Osage Orange or Cherokee Rose." "*They will grow so thick that a thief or a dog cannot get through.*" Nonsense.! Your writer certainly never saw those hedges. Let him go to Madison County, Miss., where he will see the Cherokee Rose—its uselessness for a fence; and let him come to Hinds County, Miss., and he can see miles of the Osage Orange, eight to twelve feet high, which the farmers worked and pruned until they have given it up in disgust. Shading the fences, for they are no barrier against stock—shading and sapping the land. It roots well, and the trouble with the farmers here is how to get *rid of the pest.*

If they were "*near together*" inside the field, that field might as well be thrown away until the hedge could be destroyed. Why does your Fairfield correspondent want the hedge? To keep up his bank permanently? No use in it. After his bank is built sufficient to check the water, and it not being cultivated, grass, sege, briars, etc., will take to it sufficiently to keep it up.

I want you to publish this for fear that some poor brother Buster might plant his hill field out in an Osage Orange orchard. Osage Oranges are said to be good fruit *if kept until mellow.* I should not like to mellow one.

BUSTER.

Midway, Hinds Co., Miss., June 10, 1871.

"Buster" is right about the Cherokee Rose; and the Osage Orange, as generally managed, is no better; but our correspondent who advocates hill-side hedging has, for the basis of his system, an exceedingly important principle, however widely he may err in his method of carrying it out. The salvation of our hill fields lies in making of them a series of terraces. A cheap and practicable way to do this is what we want, and not ridicule thrown upon a correct theory.

DOES FARMING PAY?

Editor of The Rural Carolinian:

Does farming pay? is a question often asked, but seldom answered satisfactorily to those who ask it. I will risk the assertion, and answer unequivocally that *it does pay,* because it is the foundation upon which all other industries rest. Remove the foundation and no superstructure can stand. But does it pay you, or will it pay me?

I know of but one answer to this question, and that is, *if.* *If* what? If you will make it pay. And how is that to be done? By living strictly within the bounds of your income. If your expenses in conducting your farm exceed your income it will not pay, but you may increase your profit by reducing your expenses; then if your income exceed your expenses, it pays you. We often see men become poor by appearing to be rich, and we sometimes see men become rich by appearing to be poor.

I advise those disposed to ask the question to try it, and if they try and don't succeed,

why redouble their energies, pick their flints and try again. "It'll never do to give it up so, Mr. Brown," but keep on trying until you *make* it pay. WM. C. FREEMAN.

Olustee Creek, Ala., May 8, 1871.

FORECASTING THE SEASONS.

Editor of The Rural Carolinian:

I am very well pleased with an article on the "Possibility of Forecasting the Seasons," in the June number, and I think if your correspondent could have sent forth his prognostications a little sooner, more draining could or would have been accomplished. He could not have predicted the seasons more truly for us if he had tried. It commenced raining in this vicinity on the 25th of last month, and we have had nearly every day since a heavy shower. On the 26th of June we had a second Noah's flood, somewhat abridged.

A great variety of fertilizers have been used this year around me. Thus far the "Etiwan," with sufficient partially decomposed lot manure to absorb the guano, until wanted by the crop, seems to be the best. If it continues to keep the cotton in as thriving condition until harvested, I think it will be largely used next year.

Getting a stand of cotton at the first planting is the difficulty. I have heard of its being transplanted. Can you inform us how it is done? What instruments, etc., are used, and whether the transplanted is as productive as the planted cotton? I would like to hear from some one who has tried it. Freedmen are working well. E. A. NIX.

Shiloh, Orangeburg County, S. C.

With Elerbee's "Transplanter," which any common field hand can easily learn to use, cotton can be transplanted rapidly, and if it be done when the ground is moist, the plants will hardly be checked at all in their growth.

THE SEED QUESTION AGAIN.

Editor of The Rural Carolinian:

Mr. Ravenel has offered some capital suggestions on this subject. From all quarters, this season, we have heard complaints of bad seed. We heard a gentleman, a few days ago, say he had planted a dozen papers of seed this season but had no plants.

To-day we walked over a cabbage bed. The seed were bought of a seedsman in King street, Charleston, labelled "Large Late Drumhead," and there are at least six distinct varieties of cabbage in the square, some of them as little like drumhead as a long collard. In a lot of "Yellow Crook Neck Squash" there is nothing but green striped ones, and among the scolloped patty pan variety, we have round yellow and striped.

We can grow our own seed, and know what we are planting; and we deserve to be cheated and laughed at if we continue such a stupid policy. * * *

THE WADMALAW POTATOES.

Editor of The Rural Carolinian:

The Irish potatoes you made mention of in the June number of THE RURAL CAROLINIAN were planted about the middle of January, on a small *garden* bed, about twenty-four by fifty-feet, the rows running parallel with the shorter side.

The bed, having been ploughed and well raked, was then laid off in trenches thirty inches apart, and about six inches in depth; about two inches of the trench was then filled up with hog-pen manure, which was lightly covered with earth, and the sets placed apart from ten to twelve inches; over the sets cotton seed was scattered, four quarts to the row, and the bed was then levelled and kept so. GEO. W. G. HART.

THE CLIMAX MOWER AND REAPER.

Editor of The Rural Carolinian:

I lately had an opportunity of trying one of these machines in a wheat field, much of the grain in which was badly lodged, and nearly all very thick and tall. To my surprise it worked splendidly, cutting clean and leaving it ready for the binder. The result is, I will buy the machine. Yesterday I set it up as a mower, and went into some clover, badly down, very heavy, and with a superabundance of thistles, and mullens thicker and larger than I ever saw in any other meadow, and it went through completely, proving it to be the reaper and mower we want.

I have used on my farm a number of different machines in the past twenty years, but none does the work like this. I will add, I am not an agent, or in any way connected with the Company, and have no axe to grind; although I have felt rather sore, as did my horses, over some of the machines that I have used. One day I worked the Climax Reaper steady all the time, with a team of small roadster mares, and yet they did not tire, although they are too light to plough.

JOHN S. GOE.

Brownsville, Pa., June 28, 1871.

CORN IN THE SHUCK.

Editor of The Rural Carolinian:

So uniform are the habits and customs of feeding working stock, that any variation may be deemed unworthy of notice; but let me urge all to concede something to an experience, extending over some years, in one who has run as many as thirteen ploughs, and who has never lost any of his animals from any disease or other causes.

I attribute their health and longevity en-

tirely to *feeding on corn in the shuck.* If you wish fat, healthy and thrifty animals, never shuck your feed corn. At first, for a few times, they will waste the corn when fed in the shuck, but they will soon learn the folly of that, and not a grain will be lost, but fully one-third of forage will be saved.

J. B. P.

Midway, S. C., July 11, 1871.

THE BEAN WEEVIL AGAIN.

Editor of The Rural Carolinian:

The best plan to preserve beans from weevil is to gather the earliest and best matured seed, lay them on a shallow vessel, (tin or Japanned ware is best,) give them plenty fresh air, and sun occasionally in the early or latter part of the day, as the greatest heat of the sun would injure them. I have tried this plan for several years with success.

Mrs. F. D. Cloud.

Ridgeway, S. C., July 5, 1871.

INQUIRIES AND ANSWERS.

J. P., of Chester, who is working a valuable plantation in Fairfield County, wishes to know the best method of eradicating wire grass, and whether or not he can buy a "wire grass plough." We scarcely know how to reply to these inquiries, for, though we have had much experience in battling against this pest, we have never been able to destroy it. We remember, that before the war the Fair Grounds in Columbia were hopelessly covered with this grass, and therefore, as we thought, would never produce cotton. Since that time we have seen those acres thoroughly ploughed, harrowed and raked, and cart loads of this grass taken from them, and this work succeeded by a beautiful cotton crop. Possibly shallow scootering, harrowing and raking may subdue, but it is next to impossible to destroy it. We once, as an experiment, pulled up some of this grass, turned the tops under some fresh earth, leaving the roots exposed; a rain fell soon after, and in three days every root had sent out a shoot. Turning it under will never destroy it. It must be eradicated, and dried in the sun to be destroyed. Cannot the inventive genius of our mechanical friends give us "a wire grass plough?"

——Alex. Y. Lee, Architect and Engineer, Columbia, S. C., in reply to a late inquiry, says: "If W. A. & Co. will put me in possession of such data as will enable me to give him the desired information concerning the construction of a brick dam, I will submit a plan to him. Let me have a profile of the site, the nature of the foundation, and indicate also the height to which it is proposed to raise the water, then I can furnish a cross section of that dam, and tell him how I should build it of brick; but perhaps a more economical method could be pursued. I think that it would be a saving of time and money, to say nothing of the disappointment and vexation that might arise from a start in the wrong direction, to employ a competent engineer, and pay him his customary fees, and you will find that such service is not a useless expense."

——One of the vetches sent us by R. C. (the short-podded one) got accidentally destroyed before we had ascertained its specific name. The other proved to be *Vicia sativa*, a species very generally naturalized here. R. C. thinks favorably of it as a forage crop, for which purpose it has long been grown in Europe. The grass is *Elymus Virginicus.* The specimens of White Meliot (*Meliotus alba*) and Spurry (*Spergula avensis*) are very acceptable. Both are useful plants, the former making, it is said, an excellent bee pasture.

——L. D. B's inquiry in regard to digging and keeping Irish potatoes failed to reach us in time to make our reply of much service for this season. The keeping is a difficult matter; but a good way of doing all that can well be done to this end is detailed in The Rural Carolinian for May, 1870, and consists essentially in spreading them—none but perfectly sound ones—in a cool, dry place, (as under a house,) to remain till there is danger from frost, and then packing them in dry sand, and covering so as to keep from freezing.

——The remedy for rust in wheat, to which A. refers, has already been published in The Rural Carolinian; but the fact seems to be that there are two kinds of rust in wheat, and the kind now so generally prevalent probably could not be reached by the preparation referred to or by any known means.

——H. D. B., Box 13, Newberry C. H., S. C., wishes to know where (in South Carolina, if possible) he can buy a South Down buck, being afraid of the risk of shipping from the North at this season of the year, and wanting the animal for immediate use.

——"Young Farmer" should sow rye for winter pasture in September, two bushels to the acre; or sow in the cotton field in August after the last ploughing of cotton. Graze in the fall if there should be danger of its running to head.

——C. F. P., Picolata, Fla., wishes to know if plants can be raised from the coffee bean of the stores. We have never tried them, but there is nothing, we believe, in their preparation, that would be likely to destroy their vitality. Can any reader answer from experience? The "Cheap Underdrain" mentioned in THE RURAL CAROLINIAN for November, 1870, is adapted to any kind of soil. In Florida, you would find palmetto leaves and wire grass better, perhaps, than pine tags with which to cover the poles.

——C. F. P. replies to A. F. S. that a sweet orange fruited by budding on a "sour stump" *will* produce sweet oranges. This fruit is always true to kind.

——X. B. wants some process for composting spent tan bark, so as to form a good fertilizer. He has an immense quantity of it around his tannery, and thinks it can be made useful.

——C., Albany, Georgia, sends us a plant to which his attention was called by his horse seeming to prefer it to the grasses with which it was growing. It is knot-weed, (*Polygonum aviculare*,) and has not been supposed to have any value as a food for animals. It is said to have medicinal properties, and may have been instinctively chosen by the horse on that account.

——The grass sent by J. C. F., Lancaster Co., S. C., is velvet grass (*Holcus lanatus*) a good grass on rich, moist bottom land. Another correspondent, who has this grass, values it above all other species. The other plant, received with the grass, is stone clover (*Trifolium arvense.*)

ENTOMOLOGICAL ANSWERS.

The following answers, by Mr. Dodge, were crowded out of their proper department:

ANTS IN THE GARDEN.—F. H. K. Ants are troublesome things to get rid of, but if you are determined to declare war against them, we would suggest a trial of the following:

Boil four ounces of quassia chips for ten minutes in a gallon of water, and add four ounces of soft soap. The mixture is to be poured into their holes.

If this does not drive them away, you can trap them with plates of lard, spread on thinly, of course; or, as a last resort, flood them with kerosene.

PACKING BOXES.—D. H. J. Thank you for the splendid manner in which you put up insects to send; those round wooden match boxes (without any breathing holes) *are just the thing.* Always send plenty of food.

"OKRA PESTS."—R. C. The insects found on your okra plants were received in good order, alive and kicking, and prove to be the *Lytta vittata*, described in our "Potato bug" article in the last number of THE RURAL. We figure it again.

FLEAS.—M. E. J. We have never been troubled with fleas very much, and therefore cannot speak from experience, but we have heard it stated that a few drops of oil of pennyroyal, placed on the animal's spine would cause the insects to seek other quarters. The fresh leaves of pennyroyal rubbed well into the animal's hair will answer the same purpose.

LITERARY AND HOME DEPARTMENT.

YOUNG PEOPLE AND LOVE.

The first entrance of young people into what is called society marks a most critical epoch in their lives. Their tastes are generally unformed—their preferences undecided—their manners more or less crude, according to the domestic atmosphere in which they have been reared; and yet they are expected to acquit themselves creditably in every emergency that may arise. Is it singular that they become a little bewildered in the novel situation, and occasionally say and do very foolish things. "Young folks aren't as sensible as they were in my time," says the grumbling elder. Perhaps not—but who is to blame? Parents should be at hand to guide and direct their children at this important season—to suggest a thousand little things—to give an almost imperceptible check to almost imperceptible faults and tendencies, and to lead conversation into a refining and elevating channel instead of allowing it to degenerate into mere gossip. Share their talk, their sympathies, their pleasure. Never let them suppose for a moment that you are too old or too wise to be interested in what interests them. "Don't talk so much about the gentlemen, my dear—it don't sound well,'

is Mrs. Brown's caution to her impulsive little daughter, and the consequence is that the girl's sympathies are sealed up at once, and Mrs. Brown, months afterward, wonders "why Mary Ann don't confide in her a little more." Let little Mary Ann talk; as long as she talks freely to her mother, there is no great harm in her selection of a subject! Mr. Smith considers it a witty thing to rally Tom unmercifully the moment he discovers Tom's shy partiality for the blue-eyed damsel who lives across the street. Tom is but mortal, and naturally Tom feels hurt, and would cut out his tongue sooner than betray his inward sensations to the sarcastic paterfamilias. Oh, the folly of parents in some things! The nonsense of sixty is the sweetest kind of sense to sixteen; and the father and mother who renew their own youths in that of their children, may be said to experience a second blossoming of their lives. Teach them to talk to you of their friends and companions. Let the girls chat freely about gentlemen if they wish. It is far better to control the subject than to forbid it. Don't make fun of your boy's shamefaced first love, but help him to judge the article properly. You would hardly send him by himself to select a coat or a hat—has he not equal need of your counsel and assistance in selecting that much more uncertain piece of goods, a sweetheart?

There is a great deal of popular nonsense talked and written about the folly of our girls contracting early marriages. It is not the early marriage that is in fault, it is the premature choice of a husband. Only take time enough about selecting the proper person, and it is not of much consequence how soon the minister is called in. Keep him on trial a little while, girls; look at him from every possible point of view, domestic or foreign. Don't be deluded by the hollow glitter of handsome features and prepossessing manners. A Greek nose or a graceful brow will not insure conjugal happiness by any means. A husband ought to be like a water-tight roof, equally serviceable in sunny or rainy weather. And bear in mind that a charming lover does not necessarily make a good husband.

Moreover, it is not best to lose sight of the fact that mere passing fancy is not love. It is easy to imagine one's self captivated by a pleasant face, a winning tongue, or a fascinating manner—to fall unconsciously into a day-dream in which the centre piece is *one* figure. Nearly every woman has half a dozen such little life-episodes before the genuine, all-absorbing experience comes, and nearly every man can count them by the dozen. The great error lies in misconstruction; in taking it for granted that the transient sparkle is the real steady flame. Society is an indefinite benefit in such cases as these. Very few who have reaped the advantage of extended social intercourse are apt to make this very serious mistake, whereas the reserved student, and unsophisticated country girl, too often find their happiness wrecked on no more formidable rock than a passing fancy. Change of air is frequently prescribed to sufferers from physical ailments, and change of beaux and belles will be found quite as beneficial to those who are sighing under the influences of the little blind god! There is a good deal of the caoutchouc element about these human hearts of ours, if we only knew it!

PLIGHTED.

Mine to the core of my heart, my beauty!
Mine—all mine, and for love, not duty;
Love given willingly, full and free,
Love for love's sake, as I love thee.
Duty, a servant, keeps the keys,
But love, the master, goes in and out
Of his goodly chambers, with song and shout.
Just as he please—just as he please!

Mine, from the dear head's crown, brown-golden,
To the silken foot that's scarce beholden;
Give a warm hand to a friend—a smile,
Like a generous lady, now and awhile;
But the sanctuary heart that none dare win,
Keep holiest of holiest evermore—
The crowd in the aisles may watch the door,
The high-priest only enters in.

Mine, my own—without doubts or terrors;
With all thy goodness, all thy errors,
Unto me, and to me alone, revealed,
"A spring shut up, a fountain sealed."
Many may praise thee—praise mine and thine;
Many may love thee—I'll love thee too;
But thy heart of hearts, pure, faithful, and true,
Must be mine—mine wholly—forever mine.

Mine! God, I thank Thee that Thou hast given
Something all mine on this side heaven;
Something as much myself to be
As this, my soul, which I lift to Thee,
Flesh of my flesh, bone of my bone,
Life of my life—us whom Thou dost make
Two to the world, for the world's work's sake,
But each unto each, as in Thy sight, one.

CANNING FRUIT.

We use glass jars as the cheapest in the end, and the most easily taken care of. Pick over the fruit and fill the jars. Take a common wash boiler, and make of laths, fastened together by two or three cross-bars, a frame fitted to the bottom of the boiler, to keep the jars off the bottom, and to permit the heat to

pass readily up through. Place the jars in the boiler and fill it with cold water up to the neck of the jars. Put slats on the top of the jars, and put on weights to prevent them from tipping and filling with water. Bring the water to a boiling point, and boil from ten to twenty minutes, according to the quality of the fruit. When the fruit is well through, take out one jar at a time; when the fruit has settled fill up from another jar. Have a preparation of sugar and water—one pound, or a pound and a half, as preferred, to a quart of water, keep boiling hot, and fill up the interstices between the fruit with this; have each jar completely filled, and then put on the cap and seal up as directed. If sealed up in this way, and the jars are air-tight, there will be no trouble about the fruit keeping. We have common red currants put up in this way four years ago, that are in first-rate condition now. The less sugar put in at the time of canning the more natural will be the taste of the fruit on opening. After canning, the jars should be cooled gradually, and kept in a cool and dry place.

PRICKLY HEAT.

A correspondent of the Augusta *Chronicle and Sentinel*, says that this distressing eruption is caused by the solid perspirable matter not passing off in a dissolved state, as should be the case, and that it is easily cured in one day by using the warm bath for ten minutes, then rubbing the affected part with lemon juice. The warm water dissolves the salts that are lodged under the skin; so does the lemon juice. When the eruption stings and burns, lemon juice rubbed on the part affected, will give relief in a few moments. Possibly strong apple vinegar might act in the same way. Persons who cannot get lemon juice might use nitric acid dissolved, twenty grains to an ounce of water.

RECIPE FOR DYSPEPSIA.

The *Farmer and Gardener*, reprinting an abominable recipe for frying potatoes, in which lard and fat bacon hold a conspicuous place, says:

We could almost imagine that the recommender of it was the possessor of some sovereign dyspectic remedy for which he wishes to create a demand. It would be difficult to contrive a diet that would prove a greater success for this purpose than that cooked in the style above described. Let fried, fat greasy food alone, unless you want to patronize your doctor.

RECIPES.

To Dry Figs.—Gather them by hand when just ripe; have ready some strong, hot lye, made from hickory or oak ashes, and dip each fig in three times; let them dry a short time in a moderately hot stove or oven; make a syrup of sugar and water, and while hot, throw the figs in for two or three minutes, then spread on tin sheets, cover them with gauze, set them in the sun, and turn every three hours. Take them in at night, and, as soon as perfectly dry, pack them closely in boxes, with sugar strewed between each layer. Moisture, or night dews, or flies ruin them.

After dipping in lye, if stewed down in moderately thick syrup for some hours they make a nice preserve. L. L.

To Make Rye and Indian Bread.—For a good thick loaf, one pint of rye and three of corn meal, half a cup of molasses or brown sugar; stir in boiling water to thoroughly scald it, cover and let stand till cool, then reduce with cold milk until quite thin, so as to pour into a pan; bake all day, let stand in oven all night if convenient. If you don't have a luscious loaf in the morning then I am not the daughter of a New England mother. If the crust is too hard to eat, remove and soak in water, and add it to the next loaf, and it will be richer and superior to the first; after the second or third loaf you will need no sweetening.

Pickled Tomatoes.—Always use those which are thoroughly ripe. The small round ones are decidedly the best. Do not prick them, as most receipt books direct. Let them be in strong brine three or four days, then put them down in layers in your jars, mixing them with small onions and pieces of horse-radish; then pour on the vinegar cold, which should be first spiced; as for peppers, let there be a spice bag to throw into every pot. Cover them carefully, and set them into the cellar for a full month before using. Green tomatoes can be pickled in many of the ways that are used for green cucumbers; but it is usually best to add a larger amount of pepper and spices, to give them a flavor.

Coffee Custard.—Mix one egg with a cup of fresh ground coffee, and pour on it a pint of boiling water; boil five minutes, pour in a cup of cold water, and let it stand ten minutes. Pour it off clear into a saucepan, add a pint of cream and boil. Beat from five to eight eggs with one and a half cups of sugar, and pour the boiling mixture over this, stirring it well. Set the whole in boiling water, and stir till it thickens. Serve in cups to eat cold.

PUBLISHERS' DEPARTMENT.

RATES OF ADVERTISING.

	1 Mo.	2 Mos.	3 Mos.	6 Mos	1 Year.	SPECIAL.
1 page.....	$25	$45	$60	$100	$180	Outside back cover
¾ page.....	20	37	50	80	140	double rates. Inside
1 column	15	28	40	60	100	back cover, 50 per
¾ column	12	22	30	50	90	cent. added to rates.
½ column	10	18	25	40	75	No advertisements
¼ column	5	9	13	24	40	taken for front cover.
⅛ column	3	6	8	12	20	
1-16 col.....	2	4	5	7	12	

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We never, under any circumstances, give paid-for "notices" in our editorial columns.

Address all business communications to the Publishers, all contributions to the Editor. Where both are embraced, address the Publisher.

Subscriptions payable invariably *in advance.*

We offer, as special inducements to new subscribers, the following *club rates:*

6 copies sent for $10.
10 " " " 16.
20 " " " 30.

Subscriptions may begin at any time.

Moneys must be sent by Draft, Postoffice Order, Registered Letter, or Express, at our risk, but at the sender's expense.

We will send the receipts for all renewals of subscriptions in the *number* of the magazine following the date of the reception of the remittance by us.

NOT CLUBBING WITH CHARLESTON WEEKLY NEWS.

Some time since the proprietors of the Charleston *Weekly News* declined clubbing any further with THE RURAL CAROLINIAN. We are thus unable to renew old or take new subscribers under the previously existing arrangement. We are still clubbing with many first-class leading Dailies and Weeklies through the South.

BACK NUMBERS FOR JANUARY AND FEBRUARY, 1871, WANTED.

Our subscription list ran up so rapidly in these months as to completely exhaust our edition. As we have still frequent calls for these numbers, we would like to secure several hundred of them.

Cannot some of our subscribers, who have read and do not wish to preserve them, help us out? To all who will send us copies of these numbers (January and February, 1871) per mail, *prepaid*, we will extend their subscription one month for each copy sent. We thus give a *new* number for an old one.

Parties must mark their names and postoffice legibly on the covers and prepay the postage.

Receipt will be acknowledged in following number of the Magazine.

This offer will cover all numbers received by us previous to September 1st, 1871. But none received after that time, nor any other numbers of the Magazine.

WALKER, EVANS & COGSWELL.

BOUND COPIES OF VOLUME I.—A FEW COPIES LEFT.

It is a handsome volume of 800 pages, illustrated with more than 250 engravings on wood, stone and steel, among which are first-rate likenesses of David Dickson, the great Farmer; De Lesseps, the great Engineer; Liebig, the great Agricultural Chemist; W. Gilmore Simms, the great Southern Novelist, and others. Price only $2 50 We cannot afford to prepay freight. It cost to send it per mail forty cents. On the line of the South Carolina, Northeastern, and Savannah and Charleston Railroads, it costs per express, twenty-five cents. Include *amount* of freight in your remittance Address

WALKER, EVANS & COGSWELL,
Charleston, S. C.

FARM AND GARDEN CALENDAR FOR AUGUST.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance North or South of this place must make the necessary allowances for difference in the seasons—about five days for each degree of latitude.

AGRICULTURAL OPERATIONS.

Where the crop is not already laid by, the sweeps and hoes must be kept moving in the cotton field, the culture being very shallow. In the meantime get ready for the picking by cleaning up gin-house and preparing baskets, sacks, etc. Little picking, however, will be done till next month in this latitude or northward. See Col. Aiken's remarks on sowing small grain in cotton land, page 602.

——Corn of the early planting is, of course, laid by, but the late crop, of which we hope there has been a large area planted, may still require working. Do not neglect it. The partial failure of the wheat crop makes this all the more important.

——Wheat, Rye, Oats, etc., must not be neglected this season, and we trust preparations are made, or making, for planting largely. Read the article on "Small Grain," page 601. There is sound advice there from a practical planter, who speaks from experience.

——Fodder, if pulled at all, must not be taken off too soon, or the quality and weight of the grain will be badly injured. Wait till the grain has began to shrink. After the fodder is pulled, it is often rendered nearly worthless, in showery weather, by bad curing. If you can get one day's good sun, or even less, you may bundle in small sheaves, stack, and in a few days pull down again, as the weather permits, and thus bring it through, looking tolerably bright even in unfavorable weather.

——Sweet potatoes must not be forgotten. Pull up the weeds when you can no longer use the hoe. Leave no means untried to make your crop a heavy one.

——"Make hay while the sun shines," and turn everthing to a good use that will serve for forage, crab-grass, pea-vines, millet, sorghum, etc., and don't spoil your hay in the curing, as is often done.

——Turnips may be made to help out greatly where the grain crop may be light, so we hope they will be planted largely. For the white turnips, choose, if possible, a rich, deep, sandy loam. The Ruta Bagas will do finely in the same, but a heavier soil suits them quite as well. See July number, page 589; also, number for August, 1870, page 705.

GARDEN WORK.

Cabbage, Cauliflowers, etc., of June or July sowing, may be put out in showery weather, and shaded by sticking a bush or shingle on the south side of each plant. Water frequently, if the weather prove dry. Continue to sow cabbage seed, but you must protect the seed bed from the hot sun by some arrangement for producing a partial shade.

——Beets and Carrots may be sown, sticking bushes between the rows for partial shade; also, spinach, lettuce and radishes.

——Turnips may be sown anytime during the month. Let the ground be very deeply spaded and made very rich. A dressing of some kind of phosphatic manure should be given, if practicable, no matter how much stable manure may have been dug in.

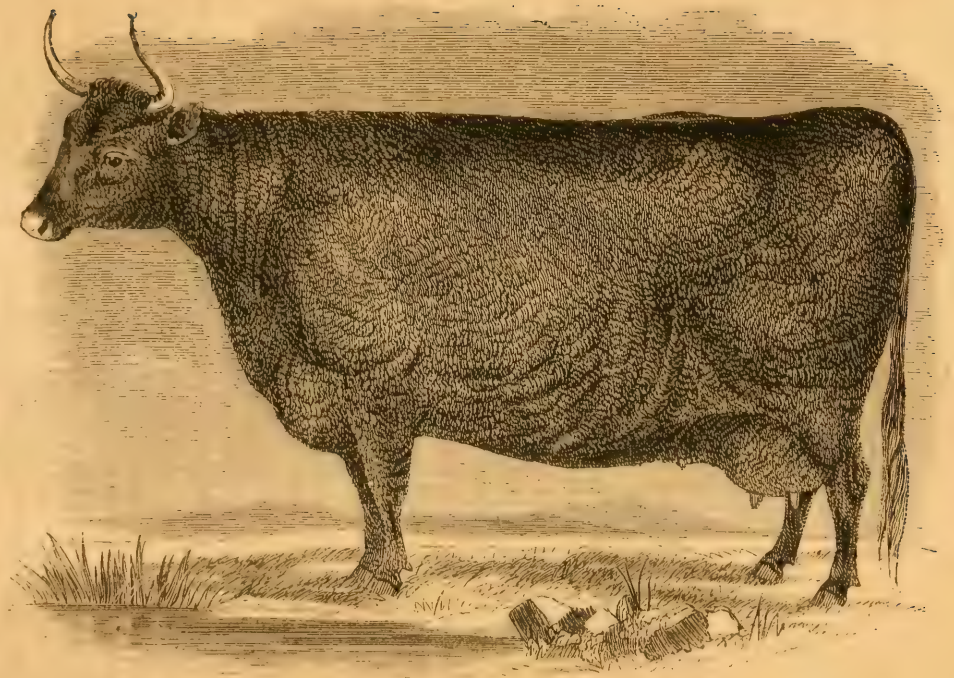
——Onions should be sown toward the last of the month. Scatter the seed thick in drills, the young plants to be transplanted in October and November.

——Celery is to be transplanted as soon as your plants attain the right size.

——Snap beans may still be planted, and will make a crop if the season prove favorable.

——Irish potatoes for a fall crop must now be put in. Choose seed that has already sprouted, if possible, so that it may come up quickly.

——In the fruit garden, budding is now in order, and should not be neglected where the operation may be called for. See number for June, 1870, page 553, for directions.



Devon Cow "Beauty."

THE

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Clover! Clover!

A friend said to me recently, "In limestone countries clover is sown to enrich land; throughout the Cotton States we have to enrich the land before we can grow clover."

My experience teaches that this is a great mistake. I am convinced that nowhere on this continent can clover be grown at less expense and with greater remuneration than on the clay lands of the South, at least as far South as the latitude of the City of Columbia, S. C. A detail of a few experiments may not be uninteresting to our readers.

In November, 1867, I sowed eight acres of old red land in barley and clover, manured with two hundred pounds of Soluble Pacific Guano per acre. In June, 1868, I reaped one hundred and forty-five bushels of barley, and secured a beautiful stand of clover on about five acres. In May, 1869, twenty-three heavy two-horse loads of clover hay were housed. The fall of 1869 was so dry the crop was pastured off by cattle and sheep. The spring of 1870, though uncommonly dry, produced a fair crop of clover; the fall crop was again grazed off. Last May I mowed a beautiful crop of hay, and in July a second cutting was housed for winter feeding of sheep. In February, 1869, the patch was broadcast with a mixture of eight bags of Wando and six hundred pounds plaster.

Last January I turned over, with a two-horse Monitor plough, all of this twenty-five acre field, but the five acres well set in clover, and in April planted it in sorghum. The three acres, upon which there was a scattering stand of clover, has had, from its first appearance above ground, infinitely the best sorghum in the field. And why? Because the dead clover, the young clover, and the roots of clover turned under in January have manured the land.

Another experiment. In 1867 I sowed a cow-penned patch of one and a half acres in barley and clover, and reported upon this patch in October and November months, 1869, of The Rural. In May, 1870, a very poor crop was taken from the patch, and in October last the young clover was pastured off

by sheep till scarcely a vestage was apparently left. Immediately after the land was turned over with a two-horse Brinley, followed by a two-horse Murfee in same furrow, and sown in wheat. This land, which three years ago was a clay bank, seemed now a rich, friable, black soil, which I felt sure would produce a wheat crop; but I feared the clover was gone. So after harrowing I sowed the surface with orchard grass seed. The wheat and grass came up well, but when I harvested in June the grass seemed choked out by as luxuriant a growth of clover as I ever saw. Where the seed came from I can't tell, but the crop is there to show for itself.

Third experiment. I have stated above that the crop of the fall of 1869 was pastured. During this time the cattle and sheep were housed every night, and their droppings sheltered until March, 1870, when they were hauled out and thrown in furrows upon which beds were made, and the land planted in cotton. This last spring, almost every one of those beds, for several inches on either side of the row of cotton stalks was covered with a thick growth of clover. Those beds were reversed, and the land again planted in cotton. At every working of the crop during the summer a young growth of clover had to be destroyed.

Fourth experiment. In April, 1870, I selected a half acre of good gray land, so thickly covered with nut grass that the ground could not be seen, for a sweet potato patch, to test the power of vines in eradicating nut grass by their shade. The land was laid off in five feet spaces, and heavily manured in the drill with manure from the cow-house, and bedded upon. In May the slips were set out. First of July the vines could not be seen for the nut grass. The patch was then thoroughly ploughed and hoed, and by September a most luxuriant growth of vines and nut grass covered the land. Last November the vines were cut and carried off; the potatoes dug; the land ploughed and cross-ploughed, and about three pecks of barley harrowed in until the land was perfectly smooth. Last June a fair crop of barley was harvested, and the stubble on at least half the patch was, in a few days perfectly hid by a complete growth of clover, which all the summer kept the nut grass so in check that there is not a healthy stalk of this pest to be seen. The first crop of clover has died, and the second crop is springing up beautifully. What effect the succeeding growth of clover will have upon the nut grass, time alone can tell. The experiment, however, is well worth pushing to a further test, for if clover can be made instrumental in destroying nut grass, its value will be increased tenfold.

The only difficulty with clover is securing a stand. I have sown it in November in all kinds of grain, and secured a perfect stand. I have, at other times, with the very same practice, been disappointed by a most perfect failure. I have sown it in February and never secured a perfect stand. Good authority says it should be sown on well-prepared, clean land in March, and allowed to battle with weeds and grass for twelve months without being trod upon. My judgment is a fall sowing on clear land, say in September or October, will ensure quite as good a stand, and so occupy the

ground by spring, that a contest with weeds and grass will not be necessary. At any rate, a stand of clover once obtained need never be lost, and is worth more annually than a crop of cotton, could the latter be grown without work. D. WYATT AIKEN.

Mistakes in the Use of Concentrated Fertilizers.

The following remarks, from that excellent paper the *Boston Journal of Chemistry*, furnish the key to many of the failures in the use of commercial fertilizers, about which so much has been said here, and which have been allowed to create so much prejudice against truly valuable and honestly made manures.

"The cause of failure in the use of concentrated fertilizers," the *Journal* says, "is often due to the *manner* in which they are applied. It is difficult for those who have been accustomed to use bulky manures, to realize that the full fertilizing potency of a bushel of animal excrement may be held in a large sized tablespoon, and that a handful of one adds to plant structures as decidedly as several shovels full of the other. A full dose of opium given to patients furnishes quite a dark, bulky powder, or pill; but if we separate the alkaloidal principle upon which its hypnotic power depends, we have only a little delicate white powder which a breath of wind will blow away. The ½ grain powder will affect the human organism as powerfully as ten times the weight of opium. If we were so forgetful of 'potencies' as to administer as much, or even one quarter as much, of the white concentrated powder as of the bulky dark one, we should destroy our patient's life, or at least do great injury to his health. So if, in the use of genuine superphosphate, or guano, or ground bones and ashes, we forget their power, and apply too much, or apply them too directly, we endanger the life of our plants.

"An experiment made upon corn affords an illustrative case in point. At the time of planting, upon a field divided by a narrow strip of sward land, we directed that on one side a tablespoonful of the mixed bone and ashes should be placed in each hill, and well covered with soil; upon the other four rows were to be treated similarly, and upon the remainder the hills should receive a double quantity. It is curious to observe the effects. The first field and the four rows are remarkably thrifty. The corn came up well, and has manifested remarkable vigor from the start. On the other hand, the over-dosed corn appeared for a long while as if it had been paralyzed by some wasting disease. It could not bear up under so much of a good thing. More free ammonia was formed at the start than could be appropriated by the tender plants, and many of them perished from over-stimulation and heat, produced by the fermentative changes of the active bodies in contact. The corn that survived is at present growing finely, and will no doubt afford a large yield.

"Now, if this had happened in the course of our regular agricultural labors, and without any understanding of the nature of the fertilizing substance used, it is probable it would have been condemned as a worthless or dangerous article. This has been the case with hundreds of experiments, and is indeed a perfectly natural conclusion to reach. But we must learn to reason, learn to have patience, learn the character of the substances we employ upon our lands. We must be careful how we reach conclusions; we must examine closely to see if they are based upon correct grounds. There are well established principles in agriculture; let us cling to them, and when we get results that are puzzling or paradoxical, we must study causes, and not judge hastily."

Queries on Rice Culture.

Messrs. Stephen Doar, Edwd. Barnwell, T. W. Johnstone, Rese Ford, John Hume, Fred. Ford, Dr. Forster.

GENTLEMEN: Your experience as rice planters induces me to take the liberty of addressing you upon certain subjects pertaining to planting that are of great importance to the inexperienced, and through this journal I solicit your advice and views upon them. First. What is it that produces maggots in rice? Sour land and impure water cannot be the only cause, as they have this season appeared in some of my rice, grown upon well-drained land, that has been under cultivation for four years. There was no appearance of them in the early part of the season, but since the rice has been laid-by they have appeared in great numbers, notwithstanding the fields have been kept clean, the water frequently changed, and almost daily sweetened by taking in water at one trunk, which forced all stale water through another and into a different creek than the one I flow from. These precautions should have ensured protection; as they have not, I am inclined to believe that in this case other than the ordinary causes have produced these worms; and, in order that you may the better determine, I will state how these fields have been managed. Two were cultivated dry; viz., after sprout water was drawn, the fields were kept dry until hoed, then flowed for twenty-one days. Owing to hills, the water was kept unusually deep, but the rice grew well and continued growing after the water was drawn. It remained dry for thirty days, when grubs made their appearance; lay-by water was put on, and held about as deep as the first water, until the rice commenced getting in barrel. At this stage of its growth maggots made their appearance in all portions of the fields except the hills. The other fields were cultivated with point and twenty-one days' water; the rice grew well. When the water was drawn, new roots were about an inch long, which should have ensured a continuation of growth; but, in a few days, all portions of the fields checked, except the hills. It remained in this condition until hoed, when it started to grow, and continued doing so during its dry

growth; but so soon as lay-by water was put on, (which was held about as deep as the first,) it again checked, and remained in this condition until it was dragged or hoed in the water; this started a growth which continued until it commenced forming barrels, when maggots made their appearance in all portions of the fields except the hills. Has deep watering produced these maggots? Did deep watering cause the rice to check in those fields cultivated with point and long water? What system have you found best for getting maggots out of rice without checking it when in barrel, or jointing? When rice is checked from any cause while young, jointing, or in barrel, how should it be managed for starting its growing? If rice checks in water, should it be dried? If it checks dry, should it be watered?

I solicit your opinions about managing alum or salt land, and managing rice during a season of salts. I have portions of fields that show signs of alum after an eighteen days' water. The rice stops growing, turns a dingy brown, remains in this condition until dried and hoed, when it commences to grow and continues growing during its dry growth; but in fifteen days after lay-by water is put on, it again checks, and in this condition shoots a miserable ear, with dark colored grains. Would it be best on such lands to let the rice joint during its dry growth? Should it be watered shallow or deep? Will gas-house lime be of benefit; if so, what quantity per acre, and when should it be applied? During seasons of salts is it best to hold stale water upon rice jointing, shooting, or in barrel? Should the fields become dry, is it best to put on hard or brackish water? And how *hard* can it be without doing injury? Your attention to these enquiries will be appreciated by a NORTH SANTEE PLANTER.

More About West Florida.

My letter of the 10th March, in reply to "D. Z. E.," has brought so many enquiries, that I deem it best and most convenient to answer your subscribers through The Rural Carolinian. Some ten or a dozen letters now lie upon my desk, with so many questions, that to answer fully would extend this communication into a book.

The climate here is one of the most delicious I ever knew. The summer's heat is tempered by the cool breezes from the Gulf, which render the days pleasant and the nights cool and enchanting. The great difficulty is to muster up moral courage enough to get out of bed in the morning. The thermometer rarely rises to 96° Far. in the shade.

The winters here seem only a continuation of your May or April, so mild is the weather, and so luxuriant and fresh the garden and fields look when properly planted and cultivated.

I must here refer to my journal of 1869, which will show the state of my garden and of the weather, from October to April.

I came here from Marion County in December, 1868, (after being stripped

of all our stock of cattle, hogs, turkeys, geese and chickens, with everything else that a ruthless set of thieves could lay hands on,) with the hope of being removed far from their depredations, (and, thank Heaven, we have been successful thus far, for the nearest XVth Amendment is twenty-five miles from us,) and have found more peace, quietude, and good health, to repay me for the pecuniary loss which forced me to leave. I settled in a cabbage hammock, as thick a covert as ever the wildest cat or tiger would wish to seek, yet with hope that at some distant time I should be, at least, comfortable, I pulled off coat and at it went. Though I have never in my life worked before, I struck boldly in with the aid of a son fifteen years old, and as we got a little space cleared we planted seed; we soon had up a log house, and as good a garden as could possibly be expected.

The 15th December, 1869, found me planting Irish potatoes, beans, peas, cucumbers, squashes, watermelons. On the 14th of January, I find all my seed up and doing finely; the last few days have been warm and like spring.

January 16th. The day has been truly spring-like though a little windy.

17th. Still warm, with indications of rain.

18th. Planted pa-paw, limes, and gave the peas a dressing of guano from Bird Island; weather warm and dry.

20th. It rained; cleared off spring-like; stuck peas.

21st. Ploughed beans and Irish potatoes.

22d. Planted corn, bene, watermelons, millet, Irish potatoes and orange seed.

25th. It rained nearly all the morning; cleared off very cool.

31st. It rained a fine rain in the forenoon; cleared off very cool. There was frost in the interior, but none here. This was the coldest snap we had that season.

February 9th. Weather clear and cool, with high winds from the N. W. Garden growing finely. Moulded my corn over.

11th. Spring-like weather.

17th. Cloudy and warm; how delicious.

The remainder is merely a repetition of weather only, with a change of the wind from one to another point of the compass. Of course, you could not publish the whole journal; the thermometer, I am certain, never went below 44° Far. during the winter.

The country is rolling with rich meadows of native grass for cattle; yet, if they are allowed to range on the beach and sleep there, they get sick. With care they do well. Stock cattle are worth from three to five dollars per head. I bought a small stock of thirty head, some fine native milch cows, at two dollars per head, or rather cheaper. I paid sixty dollars for thirty-three head at a sale.

Hogs do well, but if let alone soon scatter, and are destroyed by wild beasts; the hunting and killing of bear is equal in excitement to a skirmish.

The water is, generally, good, but there are few springs. Building materials will have to be rafted forty-five miles, from the mill of Capt. Chambers.

There is neither church or school here. We go to work early in the morning, knock off at ten o'clock, teach the children until three o'clock, then go to work again.

There is no society except what we can have amongst ourselves, (the three families,) but we are all agreeable, at least we think so!

There are no large bodies of rich land excepting one, which contains about one thousand acres, and with a small outlay of a company would make an estate worth a hundred thousand dollars. It is here, and if a company will take hold of it, I would be glad to show them around. It would bring corn or cane to perfection, then the cane crop would be so secured against frost that no hurry would be pressing the manufacturing of it. It would stand rattooning for ten years.

Persons and property are perfectly safe and secure here, for any one who is honest and will let other peoples' business alone.

The pine lands are not of the best quality, but the proximity to the sea gives all that is wanted in the shape of fish, oyster shells, pond muck and sea grass, for fertilizers, which can be had in great abundance for hauling.

The forest is almost a natural apiary, as many as ten bee trees have been found upon one hundred yards square—some were very rich. We get our provisions, generally, from New Orleans, consequently they are cheaper than the interior towns sell at. The time from Mobile to Cedar Keys by steamer is fifteen hours. Tickets, $12 or $15. Through tickets from Charleston to the Keys, $15—or time, I don't know. Young men with small means, strong arms and a willing mind to work, in a few years can improve a place that will enable them in middle life to enjoy, with ease and comfort, a good income by planting an orange grove and other fruits; for the profits and cost of which, consult the back numbers of The Rural Carolinian.

The mouth of this river is, perhaps, one of the finest locations for a turpentine factory and steam saw-mill on the coast. It is on the high roadstead to all the Gulf States, and the Bahamas and West India Islands. Then a shingle machine, with an oil press for expressing oil from fish, and shipping the residue as fish guano, would, I have no doubt, pay a handsome profit. If the business of burning shell lime, or getting palmetto leaves, pays anywhere in the world, it would here. There is such an abundance of them.

Cedar Keys, Fla. B. F. MEYER.

Influence of Color on Plant Growth.

So long ago as 1666, Sir John Newton discovered that the violet ray of the prism had the greatest indice of infraction, and Sir John Herschel found that it has the greatest chemical power; but these facts have seldom, till lately, been turned to any practical account.

For some years General A. J. Pleasonton has been experimenting with colored glass, to test the effects of the blue or violet ray on animal and vegetable life. He built a grapery, causing the violet rays, by means of colored

glass, to fall upon the growing vines. The young vines were set out, and at once, we are told, they commenced a most wonderful growth, which has continued up to the present time, a period of some ten years. The first year some of the vines grew more than forty feet in length, and the second year they were covered with bunches of grapes, bearing some twelve hundred pounds. Such a growth in seventeen months was never seen before. The next year these vines produced some two thousand pounds of grapes, and they have continued to bear large crops of fruit without intermission for the last nine years.

An experiment upon pigs was made with a very gratifying result, and it was found that those which had been subjected to the influence of violet rays developed faster, and weighed more, than those exposed to the ordinary sunlight. A most extraordinary effect was produced upon a puny Alderney bull calf, which was thought to be too feeble to raise. When put under the violet rays, in less than twenty-four hours a marked change took place, and from that time on, the development of the animal was wonderful, he manifesting great vivacity and full masculine vigor. The same experiments have been applied to poultry with great success.

We suspect that General Pleasonton, having made the violet ray his hobby, is somewhat inclined to ride it, not "into the ground," but into the sky; at the same time we cannot doubt but that there is a germ of truth in his theory, and we hope it will be carefully tested by other and less prepossessed experimenters.

Theories Practically Applied.

I find that each number of THE RURAL CAROLINIAN contains something valuable to me, and for the benefit of those who cry down "book farming" I will say that I do not think it advisable to read an article on any subject in agriculture with a view to following its suggestions "to the letter," as a soldier would follow Hardee's Tactics for drilling, or a housewife a receipt for making cake; for the same rule for drilling or for making cake will hold good anywhere. Not so with farming. Judgment and discretion are necessary to the successful application of any theory. Where the climate, soil and seasons are so varied as they are in our country, that plan for raising corn, cotton, wheat, or any other crop successfully in one locality, will, and in many instance does, prove ruinous in another part of the country. Theory and practice must go hand in hand. In other words, "as faith without works is dead," so is theory without good practical judgment to back it. And whenever the two can be brought to amicable terms with each other, and be induced to keep company, there will be a profound silence among croakers against "book farming;" and agricultural papers will be more largely circulated, more appreciated and better supported.

Let us read the articles written by those who have been so generous as to go to the pains and expense of ascertaining facts, and cull therefrom such

ideas and suggestions as are applicable to our own case and necessities. For my part, I don't expect everything in the paper to be adapted to my wants, but I am thankful for such as does suit me, and willingly allow the rest for the benefit of others.

Otherwise I should be as ungenerous and unreasonable as the man who said, "If it didn't rain for him, he didn't want it to rain for anybody else." Hence I wish you much success with your, or rather *our* paper, for I believe it does me more good than what I pay for it can possibly do you.

But I have not done what I set out to do, viz: to say something about small grain, and the importance of making preparations or laying plans at least, even this early for another crop. The notion among farmers generally since the war has been to sow down largely of their old fields in small grain, because it does not require freedmen to work it. I intended this article to show that it is an error, and should be abandoned. I also wanted to say something about rust in wheat, but maybe I have written enough for this time, it being my first attempt. Little boats must keep near the shore.

I am a young farmer. Came out of the war and went at it, and expect to keep at it, for it is an honorable and independent profession, affording an unlimited supply of pleasure, health, and profit for its faithful devotees.

However, I would like, before I am done, to invite other young men of the "plough and hoe" to a social interchange of views and experience in our business, using, by your permission, the columns of THE RURAL CAROLINIAN as a medium. We may not be able to express ourselves in language as terse or elegant as those of other callings, but hope, at least, to make ourselves understood.

PLOUGH AND HOE.

Line Creek, Laurens County, S. C.

Salt-Marsh Mud as a Fertilizer.

A correspondent of the *American Agriculturist* narrates some interesting experiments made near Stonington, Conn., in the use of mud from a salt-marsh. They will be of interest to such of our readers as reside on the coast. We should be glad to have the experience of any of our correspondents or subscribers who have made use of this manure in the South.

The experimenter in the case referred to was Mr. J. D. Fish. A steam digger was used, and a large quantity of mud was removed from a salt-marsh pond adjoining his meadows. It was dumped directly from the buckets of the digger into the cart, and drawn off by teams, and dropped in heaps where it was to be spread. It cost about sixty cents a load of a ton and a half. Beneficial results soon appeared upon the grass where it was spread. The first crop, it was estimated, was increased a third, or more, by the application. This May, the effect was still more marked, and the contrast between this meadow, and the adjoining lands not treated with this fertilizer, is very striking. The line where the dressing stopped, is very distinct. All over the

meadow the grasses are well set; the white and red clover have come in abundantly, and the herd's-grass is well rooted. A few acres of better land and grass were treated the same season with a dressing of rock-weed, which is considered one of the best fertilizers drawn from the sea. About the same value in money per acre was put in the rock-weed as in the salt-marsh mud. The yield of the land dressed with the weed was much less the first season, and this spring there is four times the grass upon the land dressed with the mud. It is estimated that a heavy dressing of stable manure costing twice as much, would not have put the land in so good condition as it now is. If the season is favorable, the yield will not be less than two tons of hay to the acre.

Mr. Fish has tried the mud on only a single crop. The result might not be so striking on corn or cotton, but there can be no doubt, but that our salt-water ditches and ponds, full of decayed sea-weeds and marine deposits, are among the cheapest sources of manure to the shore farmer. It is by no means necessary to have a steam-digger to procure it. In many places the teams can be driven to the edge of the ditches and loaded. Even where planks and wheelbarrows are necessary at low tide, it will pay well, we believe, to get it. It is much richer in ammonia than common yard manure, and will help all farm crops.

A Big Cotton Plant or—a Big Story.

The Demopolis (Ala.) *Exponent* gets credit for the following incredible story of a cotton tree. Has the Demopolis editor seen the plant? Can any of our readers tell us anything about it? Seeing is believing, but we have not seen:

In 1867 a planter of the county, living twelve miles from this city, conceived the idea that the cotton plant properly cared for could be made to bear for more than one year. He believed that the vitality of the plant was destroyed by frost and frost only. The result of his experience, which we will give in his own words, is of unspeakable importance to the material interests of the cotton growing country, placing us above and beyond the necessities and annoyances of our present system of labor.

His account of his success, which is far beyond his most sanguine expectations, is largely vouched for, and is as follows:

"I lost a large amount of money in 1866, the year succeeding the surrender, in my farming operations, and despaired, almost, of the future of the cotton section, in the many sleepless nights I passed thinking over my own affairs, and what the future had in store for myself and neighbors, whose dependence for existence rested solely upon agricultural productions, of which the culture of cotton was the chiefest, the main stay, in fact of the cotton States, the foundation upon which was built all they enjoyed of prosperity in manufacturing, in banking, in merchandizing, in all that went to make up the sum of their varied industries and interests, threatened, as these interests seemed to be, about to suffer extinction by a system of labor that made the cost of production of the cotton crop greater than the value of the article produced. By inspiration, for it could have been nothing else, it occurred to me that could the annual killing of the plant by frost be prevented, the *plant* might become a *tree*—a fruitful, ever-bearing tree.

"Success has exceeded my most sanguine expectations, my wildest dreams. I will tell you exactly how I proceeded and describe the result. In the spring of 1867 I selected a spot of ground, about forty feet square, planted in the centre a cotton seed, tended it carefully; in September I built about it a pen some eight feet square and covered it with glass, kept a thermometer in it, and by the aid of a small stove, kept life and *growth* in the plant until May of 1868, at which time I removed the pen During the summer of 1868 my plant grew till it became a small tree. In the fall of that year I picked 800 pounds of seed cotton from it, and built another pen on the same plan, but larger than the first; followed the same process through the winter and again removed my pen in the spring of 1869. That year I picked from what was then a tree, cotton that made a bale of 476 pounds. The tree had now grown so large that I deemed it safe from frost, and in the winter of 1869 and 1870 I left it unprotected. In the spring of 1870 it bloomed at the same time with the peach tree and in the fall I made from it 1,293 pounds of lint cotton. At this writing the tree is in full bloom and promises at least three bales of cotton, and is the wonder of all who see it.

"It is some twenty or twenty-five feet in height, measures at the butt nineteen inches in diamter, shows no signs of decay, and will probably live and bear fruit for years to come. If this statement does not settle the labor question, nothing will. I have endeavored to describe succinctly the result of my experiment; to have entered fully into all the minutia would have occupied a volume, but if this short article shall turn the attention of planters to the following up of this marvellous progress, my purpose will have been answered."

Don't talk about cotton fields any longer! Give us a cotton *grove* of a hundred trees, and we will be satisfied and acknowledge that the white robed tyrant is still king.

How the Factory Helps the Farm.

"It will cost you a bushel of wheat to send another bushel to New York market," a wise one remarked to a Western colonist.

"We don't intend to send our wheat to New York," was the reply, "we are putting up mills to grind it for home consumption."

These colonists are on the high road to success. They will not only make wheat, but at the same time a market. We at the South should be willing to learn a lesson from the West in this matter. We make cotton. Can we not also make a home market for it, and thus make the factory help the farm? On this point the following remarks from the New York *Tribune* are worthy of thoughtful attention:

"The introduction of manufactures into agricultural communities brings together the essential elements of wealth-producing enterprise, establishing the shortest circuit of communication. This is in accordance not only with the laws of political economy, but of that higher order whereby Nature conducts the commerce of the material world The farmer and manufacturer each have needs which the other supplies; and to bring the two into such close connection that exchanges can be made with the least possible cost, is a saving that must commend itself to the dullest mind. If our grain can be bartered for cloth made within sight of the field where it grew, that is

plainly a better deal than sending the same grain to Liverpool to pay for fabrics woven in Yorkshire.

"The factory adds value to the farm by affording a home market. A home market saves the charges, risks and waste of long carriage, the profits of intervening traders, and interest on delayed returns, and gives merchantable worth to products that will not pay such charges. Better still, a home market is sure market, little subject to the fluctuations incident to foreign demand. Regular home consumption steadies prices, drives out speculation, and gives to intelligent forethought a basis for reasonable calculation."

Agricultural Miscellany.

GARDENING *vs.* FARMING.

J. J. Mechi, in the *North British Agriculturist*, says "I could never understand why there should be any difference between gardening and farming as regards draining, deep cultivation, and abundance of manure and produce. I have asked why there should be any difference, and I am told by farmers: 1. That it would not pay to treat the garden as they do the farm—they would not grow enough. 2. When I say that is the strongest argument for gardening the land I am told by the same parties that they have neither manure or capital enough; they don't mean acreable capital enough, but, in plain English, they admit that they hold too much land in proportion to their capital. Now there is nothing so easy as to double a farmer's acreable capital. I often say to my farming friends who have 600 acres of land, and complain of want of capital, "Take a farm of only 300 acres, and you will at once double your acreable capital, and from my practical experience I can assure you that you will thus considerably increase your percentage of profit."

CHINA BERRIES AS A FERTILIZER.

The Hawkinsville (Ga.) *Dispatch* gives us the following:

"Last year a planter of this county, living near Hawkinsville, made a satisfactory experiment with the common china berry, as a manure, by using it under his corn. He tested its value by comparison with cotton seed, which he sowed in rows alternately. The yield of the rows, planted with the china berry was fifteen per cent. greater than that of the cotton seed. The rows could easily be distinguished by a more verdant appearance and vigorous growth. The planter is entirely satisfied with his experiment, and will probably make use of all the china berries upon his place the present season. Another farmer of this county assures us that for garden manure the china berry is excellent. It is well known that the berry contains a large quantity of oil, and that certain kinds of stock are exceedingly fond of it. We give these statements to the public, hoping, if there is any value in the china berry, that it will be made known."

BRAWN AND BRAINS.

The Hon. Horace Capron, in his admirable address at the Georgia State Fair, said:

"The change in your labor system involves a radical change in the manner and appliances of cultivation, a necessity which many of you fully realize and thoroughly understand. Free labor, to be most efficient, must be educated

labor—in a certain degree skilled labor; it must be supported and supplemented by improved machinery, so that every dollar expended in the exercise of human muscles may become two by the magical augmentation of rural mechanism. It is thus that our land must be cultivated and crops grown, in part by *brawn*, in part by *brains*."

THE CACTUS HEDGE IN MEXICO.

The Cactus fence is an institution peculiar to Mexico. The variety of the plant used for this purpose is called the orgando. It is eight-sided, and shoots up straight as an arrow, from ten to twenty feet in height, and five to eight inches in thickness. The fence builders cut their cactus in sections of the right length, stick the cut into a trench, cover the earth around it to the depth of a foot, and the fence is made. The pieces are set as closely together as possible, and as they take root and grow for centuries the fence improves with age, instead of going to decay like many others.

MODERN IMPROVEMENTS IN FARMING.

The improvements in modern farming do not consist so much in discovering new methods of making crops grow, as in the invention and construction of new implements and tools for executing the old processes. We cannot exceed the crops of the "heathen Chinee," nor is it probable that we can produce as much grain per acre as the Romans produced in the days of Augustus; but we can produce it with less than one-fourth the manual labor.

MIND *vs.* MUSCLE.

Our improved implements of agriculture demand a training in the farmer corresponding to this change in the working tools of his labor. To swing a scythe or handle a sickle dexterously required a long and careful training of the muscles to acquire the proper motion. Now no manual dexterity is required to run a reaper or a mower, but to keep the machine in the proper order requires some knowledge of mechanics, some thought, some brain-training. This is the tendency of all our improvements in agriculture—to relieve our hands and tax our brains.

TERMINOLOGY OF THE GRAPE VINE.—At the annual meeting of the Illinois Horticultural Society, a committee consisting of Messrs. J. E. Starr, Dr. Warder, Dr. Spalding, Dr. Hull, Pres. Flagg, Mr. Shepherd, and Prof. Burrill, was appointed to determine and settle the terminology of the different parts of the grape vine. We give below their report, which was adopted by the society, and has since been adopted by the Missouri Valley Grape Grower's Association, the Mississippi Valley Grape Grower's Association, and the Alton Horticultural Society:

Roots.—That part of the vine growing below the surface of the ground. *Stem.*—The main stock below the branches. *Arm.*—A branch permanently trained in a horizontal position. *Shoot.*—Green wood. This consists of fruit shoots, young canes, and suckers. *Lateral.*—A branch from a shoot. *Cane.*—A ripened shoot, grown from the stem, arm or spur. *Spur.*—A cane cut short. *Joint or Node.*—The enlarged part, whence come buds, leaves, and tendrils. *Internode.*—The part between the joints. *Tendril.*—The twining support.

Department of Horticulture and Rural Art.

Strawberries.

Agriculturis!.

As some of the readers of THE RURAL CAROLINIAN, may desire to know something about the leading and improved varieties of strawberries, I will describe such as have done well the past season on my grounds. I cultivate only in hills, and give deep and thorough cultivation. Soil a sandy loam.

Strawberries differ in variety; in the size, shape, color, firmness, degree of acidity and flavor of fruit, as much so as apples, pears, peaches, or any other fruit. The various varieties also differ in foliage, in the formation of roots, and in their degree of adaptability to different soils. Hence it is that one

kind may do well on a certain soil, and be but a sorry plant on another. Still the intelligent horticulturist has it in his power, in a great measure, to so manipulate his soil that it may become adapted to his plant.

Charles Downing has done well, stands our hot climate. Productive. Berries very large, deep scarlet color, conical, flesh firm, juicy, and of delicious flavor. An excellent berry for table use—good for market.

Were it not for the fact, that the *Agriculturist* is apt to sunburn, and many plants die out, I should place it at the head of the strawberry list for magnificent size of fruit as well as for exquisiteness of flavor. During January or February, I mulch my plantation of the *Agriculturist* with semi-decomposed pine-straw, that has been used for stable litter. This keeps the ground moist, and enables the plants to stand the heat much better

Boyden's No. 30, is the largest of any American variety. Plant hardy and vigorous. It is not uncommon for it to produce berries two inches and over in diameter. They set off from the calyx with a neck; flesh firm sweet.

Barnes' Mammoth is a very large, handsome berry; firm; not very juicy; sub acid, and ripens rather early. Plant hardy and productive. Good for market.

Triomphe de Gand is an old favorite variety that generally does well, and always gives good returns, in very large, splendid berries, when kind treatment and high culture are given. Fruit sweet and aromatic. Excellent for family use, and good for market when *quality* is desired. Ripens a little later than the Wilson.

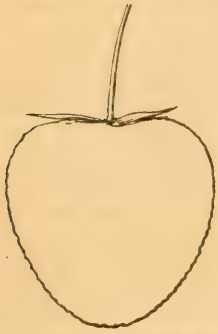
The *Green Prolific* is a seedling of the late Seth Boyden, of Newark, New Jersey, who also originated the Agriculturist and Boyden's No. 30. This variety adapts itself to most any kind of soil and climate. When cultivated in hills or stools, it is immensely productive. The berries are too soft to be sent to any distant market, but are large, of a beautiful scarlet color, and showy. An excellent berry for home use and a near market. As this is a pistillate variety, about every fourth row should be set with some staminate or hermaphrodite kind.

While the *Filmore* has not done so well the past season with some cultivators, it has yielded splendidly with me. Produces its crop late, when most other varieties are through bearing. The berries are very large, coxcombed, black-red, sweet delicious flavor. Plant does not sunburn; but must have rich soil, and thorough culture in hills.

The *Kentucky* is a new variety, originated by J. S. Downer, from a seedling of the Charles Downing. In appearance, size and flavor of berry it resembles its parent, but differs in foliage. Ripens a little later. In the North it is claimed as a very late variety. I do not find it so here. It is very productive, and stands our climate better than any other variety on my grounds, the Wilson not excepted. Berries fine for family use, also good for market.

Triumph of America is a new variety which promises well. Berries of very large size, aromatic flavor, delicious. No better for the table. Ripens early.

White Pine is a white berry with a tinge of red when fully ripe. Large size, highly perfumed, delicious. Late, continues a long time in bearing. Makes beautiful preserves, and looks nice when canned.



The *Wilson Albany* variety is well known. It succeeds nearly everywhere, and under nearly all modes of treatment. Being very productive, it is largely cultivated as a market variety. Its fruit is most too acid for table use, but most excellent for jam, etc.

If I am asked what varieties I recommend to plant, I must answer that it depends upon what disposition is to be made of the berries. If for family use, I would grow the largest and finest flavored, with reference to a succession from early to late. Quality would be more desirable than quantity. Where quantity is the great consideration of the marketman, I should plant the Wilson, with enough of the fine and improved kinds to supply those customers who have developed taste sufficiently to appreciate a superior berry.

The strawberry, unquestionably, stands at the head of the list of small fruits. It is the first to ripen; and comes at a time when our system needs a change from the concentrated and carbonaceous diet of the winter months. The fruit is cooling and refreshing in cases of fever, and lends great assistance in rectifying biliary derangements.

J. P. H. BROWN.

Augusta, Ga., July 14, 1871.

Experience with Tomatoes.

Being fond of tomatoes, and having seeds of many varieties sent us with a request to test them, we have this season grown and carefully observed not less than fifteen kinds, making notes of their time of ripening, size and form of fruit, productiveness, flavor, keeping qualities and so on. We purpose to speak of only a few of them, the greater number showing no decided special merit, though, the season being favorable, all produced good crops.

Trophy.—At the head of the list we must place the Trophy, and we might end with it, too; for if it should succeed as well, generally, as it has with us this season, few will care to plant any other variety. Hitherto, the boasted improvements in the tomato have not amounted to much, the old Early Smooth Red being, for general purposes, quite as good as the best of them. So we expected little from the Trophy; but we admit now, that a step in advance has been made, and that Col. Geo. E. Warring, who disseminated it, and made "a good thing of it" for himself, by selling the seeds the first year

for $5 a package, has conferred a great benefit on the public. Here is what Col. Warring says of its origin:

My attention was called to it by a friend, whose father, an amateur horticulturist, commenced, twenty-four years ago, the series of experiments by which he has brought it to its present superb condition. His first step was to cross the old crumpled large red tomato (which was very heavy, but so rough as to be worthless) with the watery Early Smooth Red. This crossing was continued for several years, until he succeeded in putting the convoluted flesh of the one inside of the smooth skin of the other. In accomplishing this, he adhered as closely to a fixed line of action, and worked as scientifically for the attainment of a predetermined end, as did the originators of the famous Short-Horn breed of cattle. The end once accomplished, he has, during nearly twenty years, constantly selected a very few specimens of the best and best flavored of the earliest fruit for the next year's seed; and now, when properly treated, the seed will, with certainty, reproduce the perfect type—a tomato that has never yet been even remotely approached for excellence. Without wishing to detract from the fame of the popularly favorite tomatoes, all of which I have faithfully cultivated, I have no hesitation in saying that the Trophy is as far superior to the best of them as a herd of Short-Horn cattle is superior to the chance stock of an average farm.

It is claimed that the Trophy is the earliest of all tomatoes, but the best we can say of it in this respect is that it proved with us as early as any that we had on trial, several others ripening at the same time. In other respects, too much can hardly be said in its praise. It is, unquestionably, the largest, smoothest, most fleshy and heaviest of all the kinds yet introduced. The fruit on our vines of this variety was at least a third larger than that on any other kind, many specimens weighing over a pound. The plants are productive, the fruit not inclined to rot, and the flavor excellent. It must, we think, take the place of all others as a market fruit.

Hampstead.—Next in size to the Trophy, and very smooth, solid and fine flavored, was the Hampstead, a new pinkish red variety, originated here; but it has proved, so far, a shy bearer.

Lyman's Mammoth Cluster.—This is a very handsome pinkish red tomato, of fair size, perfectly smooth, growing in clusters, and very productive.

Dixie.—Seed of this new variety was sent us by Prof. J. Parish Stelle, who originated it by crossing the common orange and the common white varieties. It is of a bright yellow color, medium size, and somewhat lobed. The plant is very productive, and continues a long time in bearing. This tomato has the peculiar delicate fruity flavor of the white and yellow varieties in a higher degree than any of them, and is in quality (to our taste) *the best we have ever eaten.* Simply stewed, and sweetened with white sugar, it gives one a delicious combination of fruit and tomato flavors, which, to be appreciated, must be tasted.

Magenta.—This is also one of Prof. Stelle's new varieties, but, though fine flavored, and of a beautiful color, does not please us so well as Dixie.

Chisolm.—Seeds received from our correspondent, Robert Chisolm, proved fully equal to his description; and if we had not the Trophy, we should have

more to say of this, as well as of Gen. Grant, Charter Oak, Maupay's Superior, and others which did very well with us this season.

Trophy and Dixie are our two chosen varieties, till something better comes up, and, except for special purposes, as for preserving and pickling, or for ornament, we want no others. The plum tomatoes, red and yellow, are excellent for the former purposes, and the new Currant tomato is very pretty.

Why and How the Cabbage Heads.---Rationale of the Process.

All plants have an aptitude and inherent capacity for storing up supplies of plant food for future use. Among the annuals the growth is so rapid that this tendency is not perceptible. The biennials and perennials show it in various ways; sometimes it is in the thickened root, sometimes in the rhizoma, the bulb, or the tuber, but oftenest in the buds. Preparation being thus made for the future, there is a period of rest, more or less extended; then follows a rapid growth, inflorescence, maturing of the seed and exhaustion. Among perennial and woody plants, this preparation is made towards autumn in the form of buds, and it is here we find the explanation of the heading of cabbage and lettuce.

A bud, as it stands in winter on the tree, with its compact folds of leaves and shortened axis, is only a small "head," and a cabbage head is only a large terminal "bud," with compacted leaves and shortened axis, resting for a period, and accumulating starch and other plant-food for the supply of the flowering process and ripening of seeds.

It is a universal law in all vegetation which is prolonged for any length of time, that the collecting and storing up of plant-food takes place preparatory to the exhaustive process of maturing seeds. The turnip, beet, etc., store them in the root; the cauliflower in the flower stock; some do it in the thickened leaves, but the most common mode is by buds.

The cabbage and lettuce in their natural state are biennials, that is, they pass through parts of two growing seasons, though really their growth is accomplished (or may be) in less than twelve months. The seeds, after maturing and falling to the ground, vegetate towards autumn, or as soon as the intense heats of summer are over; they pass through a period of comparative rest, or slow growth during winter, developing rapidly, as warm weather comes on, into flower and seed again. This natural habit prepares these plants to form "heads" or terminal "buds" under high cultivation.

The cabbage, after growing for a certain period, begins to form its "terminal bud," and, as in other cases, there is a shortening of the axis of growth, so that the embryo of the future inflorescence is compressed into the bud. Starchy matter accumulates, and other peculiar compounds are elaborated, the leaves become blanched by exclusion from light, and it becomes a hard, solid bud. After a certain period of rest, a new growth commences; the axis elongates

rapidly, inflorescence takes place, and as the process goes on, the leaves become green from exposure to light, and finally flaccid and exhausted. The same process takes place in spring-time, in the bursting of every bud, and the rapid growth and elongation of the axis. The "bud" and the "head" are the same result, accomplished under different conditions of growth.

Aiken, S. C. H. W. RAVENEL.

The Blue Gum—(Eucalyptus Globulus.)

This remarkable tree has lately attracted the attention of Botanists, Landscape Gardeners, and also of Medical men, Shipbuilders, Architects, etc., and promises to be of great importance. A native of Australia, the *Eucalyptus globulus* is now extensively cultivated throughout Europe. In its native country this tree grows from sixty to one hundred meters, (199 to 328 feet,) and in its other dimensions compares favorably with the big trees of California. The trees grow very rapidly, sometimes four meters (13 feet) within one year. Yet its wood is so durable and hard, that it is advantageously used in Australia for house and ship building, and is equal to the well known Teak-wood.

The blossoms and also the capsules, which are as hard as the capsules of the acorn, contain an ætheric oil. The bark also contains a small percentage of this oil, and is spotted like that of the Platana.

The oil contains very remarkable qualities, which makes it equal if not superior to that of turpentine. It does not undergo oxydation as quickly as the former. If taken as medicine, it is worked off through the lungs, and is, therefore, used very effectively in cases where the breathing organs are affected.

In Spain the oil already appears in commerce, and has been well known in that country for some time. It is used there as a preventive as well as a cure for fever. Its application for this purpose is rational, as the oil of the *Eucalyptus* is a powerful stimulant; its effect is similar to that of alcohol and the well known pepper.

A peculiarity of this tree is that the leaves are broad during the first three years, but assume after that the appearance of those of some Willows. In Europe great efforts have been made to acclimatize this beautiful tree, and in the Southern part of France the experiments have been very successful. The *Eucalyptus globulus* can be seen in Paris, and although under protection now, it is believed that the tree will thrive there in the open ground in sheltered places.

In Nizza the *Eucalyptus* has been planted for shade trees along the principal promenades, and the people also make use of the tree for medical purposes. For persons whose lungs are affected, the powder of the blossoms is very good and effective. A patient who had taken four grammes, daily, felt much improved after a very few days; the expectoration was easy and copious.

In Central Europe, and in the same latitude of America, this beautiful tree with its bluish-green color would make a very desirable ornamental tree, and on account of its rapid growth it is preferable to many others.

Although an immense tree its seeds are very small, and must be planted in pots or boxes under glass. The young trees are protected in hot houses during winter; and the following spring, when they have attained a height of several feet they are planted in the open ground. In the coming autumn they will have attained a height of eight to nine feet, and they have a very good effect as single specimens on the lawn.

The tree does well in any ordinary soil, but thrives best in deep, light loam. For the South of Europe, the North of Africa, and the Southern States of North America, it will become a tree of great practical value and importance in the course of a few years. In Toulon this *Eucalyptus* is cultivated in order to cover the rocky hills which surround the city. The young trees have been planted four feet apart, so that they may protect each other against the high winds. From Nizza to Marseille, and also in Algère thousands of the *Eucalyptus globulus* have now their existence. They are also cultivated in the gardens of the Viceroy of Ægypt, where a much faster growth has been obtained by scoring the bark perpendicularly. This method has the effect of removing all obstacles in the rapid increase of the body of the tree.—*California Horticulturist.*

Success in Window Gardening.

A contributor of *The Western Gardener* advises all cultivators of window flowers, in window gardens, to observe the few following plain directions:

1. Get good healthy plants to begin with; that is such as have been prepared for winter blooming by giving them rest during the summer, or, in other words, not kept blooming for two or three months previously to removing them to the house.

2. Keep only a few plants, so that they will not be crowded in the window, or by setting two or three thick on top of each other.

3. Keep the soil in the pots rather dry than wet, and the foliage of them moist by frequent syringing.

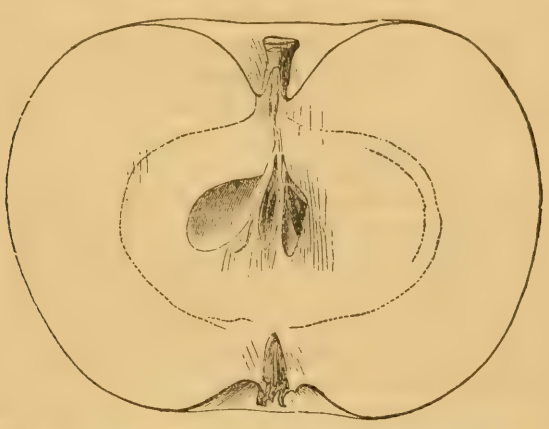
4. Keep a uniform temperature, as near as possible from 60 to 70 degrees in the daytime, and 45 to 50 degrees in the night.

5. Give them air freely on mild days, but take care that the air does not come directly on the plants being tempered, which can be done by letting down the top sash, thus admitting the cool air above the plants.

6. Select different varieties of plants for different places; for instance, roses, geraniums, etc., delight in a temperature from 45 to 55 degrees, in a sunny window, while begonias, coleuses, cissus discolor, want a much warmer place, 60 or 70 degrees or more, and but very little or no sun, while heliotropes, bouvardias, and fuschias want all the sun possible, with a temperature of from 60 to 75 degrees, the latter during the daytime.

7. Keep a close watch on insects. The green fly and red spider are very troublesome, for which use plenty of soft water (of the temperature of the room) in which has been soaked tobacco stems, in the proportion of one pound to the gallon, and syringe the plants with it about every fortnight whether there are any insects on your plants or not, and you will not be troubled with them.

Borun's Winter Apple.



This beautiful fruit originated in Guilford County, North Carolina, and is a fine apple for that latitude. It has but a limited distribution further South, but should be tried in the middle country of South Carolina and Georgia. The fruit is large, (the cut not being full size;) form, oblate; color, light greenish yellow striped with red; flesh, rich, juicy, slightly acid, very good. The fruit keeps well. The tree is an upright grower, and bears when quite young.

Horticultural Miscellany.

GUARANA.

Lately a new article has made its appearance in commerce, serving a similar purpose to tea or coffee. It is known under the name of Guarana, and although it has been used almost exclusively for its medical properties, it is now relished by many as an article of food. In Brazil, the Guarana is used instead of coffee or tea.

The first information received of this article was through Spix and Martius, who travelled for some time in Brazil. There they were told that the Guarana is made out of a vine, known as *Paullinia sorbilis*. The seeds, which ripen in October, are taken out of their capsules and dried in the sun; after which they are roasted over a slow fire, ground into a fine powder, mixed with a very little water, or exposed to the dew, which gives sufficient moisture to work the mass into a dough. To this a few whole seeds are

added, and the mass is then formed into a cylindrical or round form, and sold.

The *P. sorbilis* grows from twenty to thirty feet in height, and is propagated from seed or from cuttings. In the third year the vine begins to bear. It is pruned in the same way as our grape vines. The fruit is ripe in November, and each vine bears about eight pounds of seed.

The annual production of Guarana is about six millions of pounds.

GROWING POND LILIES.

A lady suggests the growing of pond lilies by those who have a suitable pond or stream near their dwellings. She says:

A few years ago, my husband seeing some growing in a distant pond so nicely and spontaneously, thought he would try them in his—a small pond of a few rods extent at one end of his field. He brought home a root and set it in; this was done by wading in barefoot, and taking it between the toes and pressing down in the mud. It soon made its appearance above the water, and now the pond is pretty well covered with leaves and lilies, and it does not have that sickening appearance that standing water usually has, but is made the home of one of the most beautiful kind of flowers instead.

BUY OF GOOD MEN.

The Country Gentleman says: "Tree planters do not like to be deceived; and they often ask nurserymen to *warrant their trees true to name.* There is a better way than to require such warranty. Buy of nurserymen who have a well established reputation for intelligence in their business, and fair dealings."

Grow Your Own Tea.

The article of tea can be raised in the Southern States as well as in China. It is estimated that there are consumed in the United States at least 30,000,000 pounds of tea annually. This consumption is mostly confined to the North and Northwestern States; but still a considerable amount is used at the South; enough to make it an object of attention to the farmers of our section. Every man may raise his own tea by appropriating a small plot of ground to its culture in his garden or orchard. The plant grows very readily from the seed, and in two or three years will be large enough to yield its leaves for the manufacture of the pleasant beverage that fills "the cup which cheers, but not inebriates."

The *Thea viridis* is an evergreen shrub, growing to the height of twelve or fourteen feet, and is allied in its genus to the Camelias. The flowers are white and fragrant, and resemble a single Camelia. It is quite an ornamental plant, and thus unites in itself the beautiful and the useful. The seed are produced in a cup something like an acorn, and are about the size of the acorn of the water oak. These seed, planted in the fall in a shady border, made light and rich with vegetable mould, will come up in the spring, and attain a height of eight or ten inches the first year. They should be transplanted the following spring to a shady part of the garden, to the north side of a fence, or in some position where they will be protected in the winter from the sun; and if the soil is well prepared by deep spading, and by the application of wood, earth, or leaf mould, the shrubs will flourish with great vigor, and put forth a dense mass of foliage.

Dairy and Stock Department.

The Breeding of Domestic Animals.

There is no branch of husbandry which has received as little systematic attention among the Southern people as the breeding of our domestic animals. Under the old regime it was considered the best economy to leave that to the West, and devote all our energies to the production of cotton. It is not worth while now to reason about the correctness of such a policy, but it is as plain as the nose upon a man's face, that we must diversify our pursuits or do worse.

We cannot afford to be dependant upon others for what we can produce economically ourselves, and, albeit, we may never hope to become rivals of Kentucky and Tennessee, we can, certainly, do very much towards supplying our own wants. There has been a great deal of cant about the lack of energy, the old fogyism and extravagance of the Southern people. It is all clap trap; we were a purely agricultural people, and believed it the true policy to do as we did. We have as much energy, tact, industry and capacity as any agricultural people, and if let alone have no fears but we will work out the problem satisfactorily.

Our greatest mistake has been that we have bred without system—without an eye to the wants of the country. Take, for instance, the horse; what a mongrel race you will find scattered over the country. The blood horse has been generally the favorite, but, unfortunately, there are just as worthless animals to be found among the blood stock as anywhere else. It was, for a long time, only necessary to say that a horse was imported or thoroughbred, to secure his popularity. No one ever thought of form, action, stamina, or adaptability. The consequence was, that the refuse stock of England, and the North and West, was palmed off upon us. A dash of good blood is very important, but the blood horse is not adapted to our present wants. He is too high strung, too light and fractious for a horse of all work. The blood horse does his work by muscular action—he never thinks of the economy of putting his weight quietly in the collar against the load behind him, and soon wears and frets his life away. We want a breed of horses which may answer for the saddle or light draft; quick, but steady; spirited, but reliable. We may secure it by careful selection, and crossing upon mares that breed true.

Every visitor, who had an eye for horses, will remember the beautiful animals exhibited by Gen. Hagood at one of the late fairs. It is a little remarkable that the neighborhood from which their sire came, has been, for half a century, famous for its fine horses; and the credit is given to a blood stallion brought into the neighborhood more than fifty years ago. There is another neighborhood, in the same county, where the horses have always

been remarkable; and it may be traced to a Diomede stallion brought from Virginia fifty years ago. And still another neighborhood hard by, where the people had a mania for quarter horses, and they have never got rid of the compact, heavy muscled quarter horse to this day—the most worthless of all horses.

We had hopes of the Morgan, but he has not bred well upon our natives. We have seen, comparatively very few fine horses from this cross. The great secret seems to lie in getting animals which impress their characteristics upon their progeny. There is no reliance to be put in mongrels. There is no certainty how they will breed out. The success of the Morgan and Trotter at the North is owing to this constant eye to a certain purpose. The process may be called a slow one, but it is the only sure one, and is certainly worth trying.

If we want to breed a heavy draft horse, the same policy must be pursued. We must breed with an eye to secure the qualities we want. The magnificent heavy draft animals, once so common in Pennsylvania, are now rarely seen. The breed has run out by injudicious crossing.

The mule will, probably, be always the favorite animal here—as long certainly as Sambo is amongst us. No other animal can stand him. But the policy of breeding mules is questionable; it manifestly tends to keep up the prices of horses and mules.

But it is the true policy, as matters now stand, for every farmer to procure a good mare or two, and by careful selection raise a colt or two every year. The investment will be found a good one, and it will, moreover, lead him into a routine of barley patches, clover lots and meadows that will open his eyes to comforts and pleasures never dreamed of. SNAFFLE.

About Swine and Swindlers.

"Thoroughbred Essex Pigs for sale, got by imported Lord Western, DeCoursey and Prince Royal, out of the finest imported Sows. Warranted to give satisfaction in every respect."

Such is the promising announcement of one of the many advertisements of N. P. Boyer & Co., of Parkesburg, Chester County, Pa., in the *Stock Journal*, their special puffer, and, also, in their "Illustrated Priced Catalogue," by which they proclaim themselves "prepared to fill orders for pure blood improved Essex Pigs, at forty dollars per pair, from one to two months old."

They further state, for our edification, that their prices may be somewhat higher than those of their neighbors, who start out with *inferior animals* of *doubtful pedigrees;* it is folly to expect that *pure and high-bred* animals can be had for "dung-hill prices," and as if to startle us by their stupendous preparations—"Our buildings here cover over three acres of ground, and were erected at a cost of $100,000." "On account of the enormous amount of blooded stock we ship, we have obtained *special rates* from express compa-

nies;" "are enabled to ship cheaper than parties doing a *small business;* pay route agents for taking *better care* of our stock, feeding, watering," etc.

"We intend to continue in the business, and expect, by *dealing honorably*, that the public will continue their patronage;" and, as if to inspire confidence, they proclaim: "We have a capital of over $250,000 invested in the business, and this is, of itself, a guarantee that it is *conducted honorably.*"

Now, to the uninitiated, this may all sound very grand, very honest, in fact, imposing, and we might continue to quote the fulsome egotisms, "*usque ad nauseam,*" but by the recital of the particulars of a recent transaction with this enterprising firm, we propose to prove, that if they "expected to deal honorably," they have disappointed their own expectations most sadly, that their statements are false, their guarantees illusory, their promises worthless, their method of fulfilling them utterly despicable, and that they constitute one of the most contemptible swindling concerns, flourishing in this era of lying, cheating, stealing, and rascality generally.

To commence *ab initio.* about the first of January last, they informed me that they had "some extra fine pigs on hand, and would take pleasure in filling my order satisfactorily." I ordered a pair of their improved Essex (so-called) immediately. In about two months I made some inquiry as to the delay, when they condescended to inform me that "the pigs will be shipped by the 10th of March—*they shall be fine ones.*" After sending to the depot, a distance of sixteen miles, a half dozen times, I was, finally, relieved of further trouble by their arrival on the 24th of March, in a starving condition. The little bag of sawdust-looking food had never been opened; and they were perfectly ravenous. So much for the extra attention of route agents, in watering, feeding, etc.

No one who saw them, believed these miserable caricatures on the Essex branch of the hog family were the ones shipped by Boyer & Co., because it was "not thought that such stock could be found at the North," and the only explanation that suggested itself to my mind, was that they had been exchanged in *transitu*, but their prolonged and dogged silence forbids any such charitable conjecture.

I immediately requested an explanation, offered to re-ship them as utterly worthless, transmitted a description of the pigs and a certificate of disinterested parties as to its correctness, and proposed, if it would be more satisfactory, to furnish the names of thirty of the most reliable gentlemen of this community, any three or more of whom they might select to report to them on oath, after examining the pigs, as to the truth of my representations, and the extent of the alleged grievances.

I have written them repeatedly requesting an explanation in the most respectful terms, but conscious, I suppose, of having perpetrated a deliberate swindle, and of their inability to extenuate the outrage, they have maintained a profound silence.

I now give a transcript of the description of the pigs and certificates of its truth, to which a hundred other names might have been added if deemed necessary.

Both have a thick coat of hair, longer than that of most hogs. Lady Boyer is a little short, dumpy shoat of liliputian dimensions, and extensive abdominal developments, resembling very much what is termed, in popular parlance, a wood-rat, altogether, on the pigmy, squatty order, and can never attain respectable size under any treatment.

Sir N. P. is black, with red hair about his nose, face, throat and belly, imparting a brown tinge to those parts; ears drooped until their points fall below the eyes, very long legs, short body, narrow, thin back, gaunt belly, head unusually large and elongated, face rather prominent between the eyes, profiling a Roman nose, rump drooped, and with his hump-back forms a beautiful semi-circular curve from the root of his tail to the end of an elongated proboscis. His *tout ensemble* unmistakably proclaim him a member of the land; pike fraternity, with a rakish, vile and villainous visage.

STATE OF SOUTH CAROLINA—SUMTER COUNTY.

This is to certify that we have carefully examined the pigs shipped by N. P. Boyer & Co., of Parkesburg, Pa., to J. M. Dennis, purporting to be "pure blood, improved Essex, of stock recently imported from England," and that the above description of them is very accurate and without the least exaggeration; that, in our opinion, they are not Essex, possessing none of the characteristics of that breed; that their form, size, style and entire "make up," indicate very inferior pigs of inferior stock; that they are utterly worthless for breeding purposes, being altogether inferior to most inferior pigs to be found on our Carolina farms; that they are not worth one dollar and fifty cents apiece, and that the shipment of such pigs at any price is a disgrace to any stock dealer, and a gross imposition on the purchaser.

(Signed,) THOS. M. MULDROW.
R. E. DENNIS.
RUFUS A. GREEN.

The inimitable *chef d'œuvres* of Boyer's prodigious "hogery," are now about seven months old, and have attained the following astonishingly small weights: Sir N. P. thirty and Lady Boyer twenty-eight and a quarter pounds.

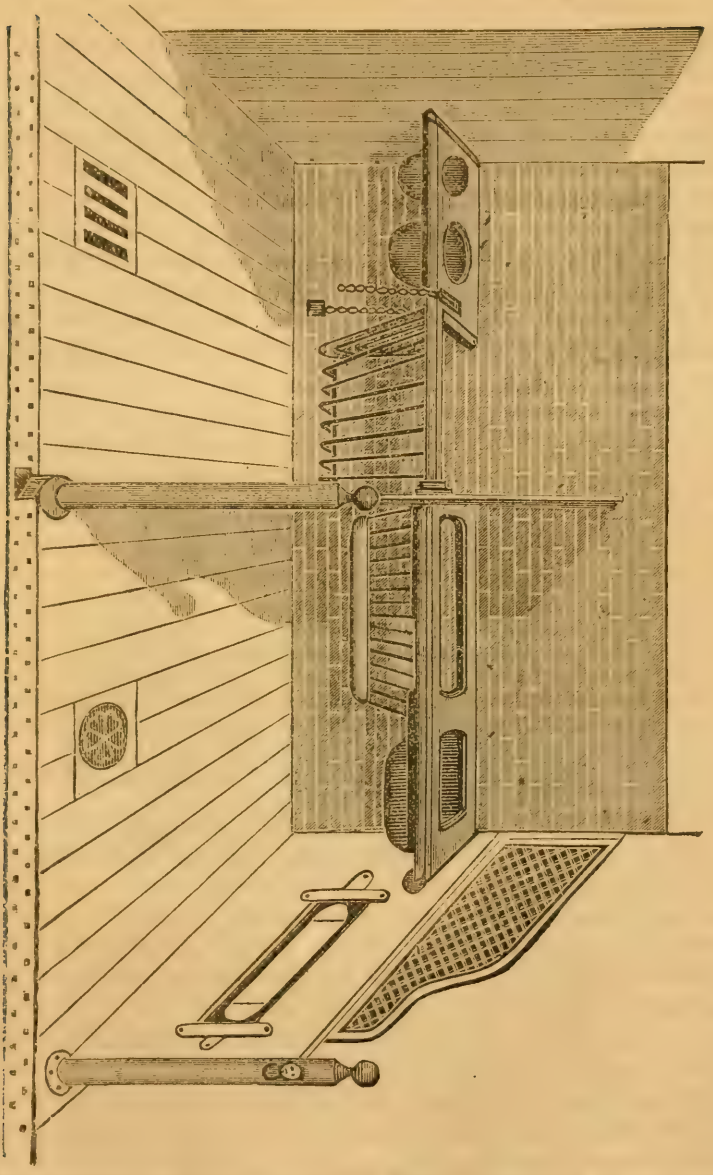
If what has been said were not deemed sufficient to establish the charge of swindling, the most indubitable testimony can be adduced that the veriest "dung hill" chickens have been sold by this concern for "dead games," guaranteed to be "pure blood" of imported stock.

It may be gratifying to these enterprising venders of "high-bred animals," to learn that these cherished and appropriate souvenirs of a most execrable transaction, will "put in an appearance" at our next State Fair in Columbia, for the gratification of admiring spectators. There they will evince to gazing multitudes the wonderful success in propagating "high-bred animals" which has attended the efforts of this firm, whose honored name they bear, and contribute additional eclat to the unenviable notoriety of the concern that "expects to deal honorably."

J. M. DENNIS.

Bishopville, S. C., 20th July, 1871.

Stable Stalls and Stall Fittings.



As a supplemental article to my stable design presented to the readers of THE RURAL, in July number, I am here able to represent the interior arrangements and fittings of a range of stalls for a modern stable. It will be observed, that the left hand stall is supplied with a water trough, or bowl, a manger or feed box; a halter chain and a hay box; whilst the adjoining stall shews only the feed trough and hay box. The stalls are separated by

strong ornamented partition guards with iron posts, and wall strips at the head of stalls, with rebate to receive the planking.

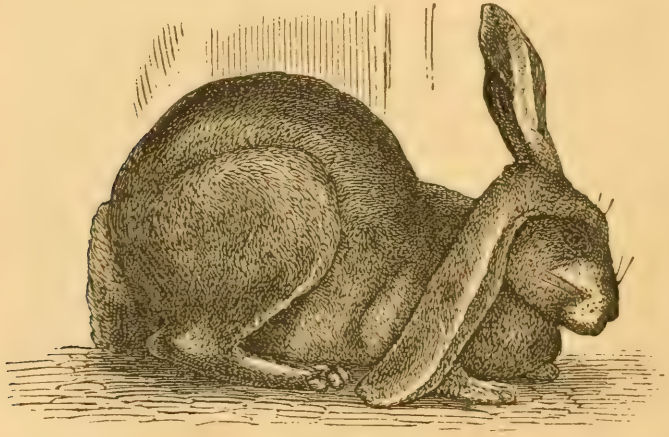
Along the entire length of stalls, and connecting with the manure pits, extends an iron gutter fitted up with patent stench traps. The halter chain in the left hand stall passes through a frame, which carries the feed box over a pully and has a weight attached to it, the object of which is to exert a moderate tension on the halter rope and to avoid any slack in it whereby the horse might become entangled in it.

I am indebted to Messrs. Sparks, Stillman & Dowdell, proprietors of the Artizans and Builders Ornamental Iron and Bronze Works, Philadelphia, for this admirable cut of stall fittings, now fast becoming in general use.

ALEX. Y. LEE.

Columbia, S. C. *Arch't. & Civ. Eng.*

The Domestic Rabbit—II.



Half Lop.

A great many varieties exist, many of which are reared only on account of their great beauty; of these are the varieties known as Lop-eared and half Lop-eared, being those that have both or one ear hanging helplessly down, the Angola, which has a beatiful longe fleece, and the Dew-lap Rabbit, which has a heavy dew-lap well coated with beautiful fur, and when the animal is reclining it lies upon its fore-feet and furnishes a comfortable cushion for his head. Leaving these, which are fancy, I shall only discuss those which are useful.

I have five varieties of the common rabbit, differing only in color—black, blue, yellow, gray and white in solid color, and from these, young ones come in each litter spotted beautifully in endless variety. The male is called a buck, and he is in disposition gentle enough, except when he finds himself in company with another buck, when a fight will ensue equaling in ferocity the combat of the bull-dog or any other brute. This renders it

necessary to keep him in perpetual imprisonment. The female is called a doe, she is at all times perfectly gentle and may safely be handled by any child. She is of so timid a disposition that she will make no show of resistance or defence of her young, but will stand quietly by and see them taken away.

The doe carries her young thirty to thirty-one days, and gives birth to from two to twelve at a birth. Should she lose them she will immediately breed again, and she will give birth to a litter every thirty-one days. This precludes the idea, however, of raising any of them, and she should not be required to breed more than once every two months, which she will easily do for two or three years, and with proper care, she will rear nine-tenths of her young.

She should be confined with the buck for a day or two, and then removed to her own quarters and the date noted. She may be observed about the twenty-fifth day thereafter building her nest of any hay or straw that she can obtain, and some should be given her. She will have completed her nest by the evening of the thirtieth day, and she will then tear the fur from her stomach and sides, and line her nest with the fur, making a perfectly soft bed for her expected little ones. During the thirty-first day the young ones will be deposited in the nest, and she will then continue pulling out her fur until she has covered them completely. She should not be touched, nor should the young ones for several days. She should be supplied with hay, (a handful) or a few blades of fodder, some grain and green food, and not touched unless her quarters be damp, when she must be carefully removed into other quarters. If the buck be allowed to come where she is he will at once eat up the young ones; and if she is disturbed she will sometimes do so herself.

The Lop-eared Rabbit.

The little ones are born blind and perfectly helpless, and are covered only with a coat of very fine down. In a week, however, their eyes will

have opened and they will be thoroughly coated with fur. Their bed should now be removed, and if their quarters be not dry and clean, the whole brood should be removed. If they are allowed to remain in a coop not properly clean, they will be effected with sore eyes and die very rapidly, but all they require is a clean dry place, and the mother will certainly rear and wean all of her young, and I know of no instance in which any have been lost during this period if this rule be observed. She will suckle them for three weeks, when she should be separated from them and put by herself for a week more, when she may renew her visit to the buck.

I have found this to be the best mode of keeping them. I have enclosed a yard of some forty feet square, with planks extending twenty inches into the ground all round. It should contain a few trees for shade and should be located at some elevated spot where the soil will not be wet. In this yard all the young ones may be permitted to run until they are five months old, when the young bucks must be disposed of as they will, after that time, engage in furious combats and lacerate each other fearfully. They should then be castrated and they will grow much larger and are rendered perfectly docile; they are large enough, however, at that time to be eaten.

Around the inside of the fence which encloses the yard, should be a number of hutches or coops to contain the breeding does and the buck. A good hutch may be made with a dry-goods case, by putting a roof on it that it will be perfectly tight, and a wire opening on the front, with numerous auger-holes in the sides and back and a proper door. The floor should slope from front to rear three inches, and at the lowest part of it, next to the back, should be a crevice of an inch, and a floor so constructed it will drain itself thoroughly, and need only to be occasionally swept off. If the hutch is to contain a doe, inside of it should be inverted, a smaller box, in which she will build her nest. A round hole six inches in diameter should be cut in the small box above the floor making it necessary for her to jump in and out, and by observing this many young ones will be saved. When she goes in to suckle them they take hold of her and continue to suck until she goes away. When she goes out, if she can just walk out, she will drag some of them out and they will not be able to find their way back, and will fall out of the hutch and be eaten up by some of the young bucks, or perish from cold or rain before discovered; if she must jump out of her nest through an aperture only large enough for herself, the little ones will be pulled off from her by the sides of the aperture, and fall in the nest where they are safe. These hutches should stand up a foot from the ground and they will furnish a shelter for the drove in the yard in wet weather.

A good breeder will average six, and she will consequently bear seventy-two in a year, of which at least sixty will be raised. With a good buck and ten young does, it is safe to estimate on raising five hundred in a year, and they can be bought and maintained on a farm a year at less than fifty dollars.

W. S. M.

Horse-Talk, done into English.

Our Dumb Animals is the name of a little paper published in Boston, and devoted to the promotion of humanity and kindness toward our humble servants of the brute creation. Some of its lessons are admirably conveyed, and we wish every owner of an animal of any kind could read and would heed them. We will help in the good work to the extent of the following:

LETTER FROM A HORSE.

Respected Person: After living unappreciated until middle life, I have, at last, found a friend who understands me, and is willing to interpret me to my master and mistress, to whom I wish to give a few ideas. You mustn't suppose horses have no brains, for I can tell you we hear and understand more than you suppose, only we can't express ourselves in a way that suits your comprehension.

IF THEY ONLY KNEW.

For instance, yesterday they took me out to exercise me. I'm such a favorite that they take care to exercise me pretty much of the time; sometimes I almost think they overdo it, but I know they mean well.

However, as I was saying, I trotted easily along, one ear kept well back to listen to the conversation. Says my lady, "I often think that if our horses only knew their own strength, and how completely we are at their mercy, we should have to take to locomotives, velocipedes and wheelbarrows, for the horses would be lost to us for ever." Says my master, "It's a blessed thing they don't."

How wild they would have looked, had they known that I understood every word!

BETTER UNDERSTANDING WANTED.

However, that's not my business now; we've talked all that over, and concluded that, on the whole, it is the destiny of horses to be driven by people, and that as long as the people treat us properly, we'll make no fuss about it. But we should like to have a little better understanding as to what proper treatment *is;* for, the fact is, although you are doubtless mostly well-intentioned, some of the things you do are so odd that it's very hard for a sensible horse to comprehend them at all.

For instance, when I take my master out of an afternoon, why does he insult me by speaking to me so rudely, he hurts my feelings continually; if he is slow about getting in, and I paw the ground to hurry him up, its—"Whoa, now! Ho, Cæsar!" shouted as if I were deaf. It jars on my nerves, and is apt to make me start a little, and then again its—"Ho now, what ye 'bout?" as if I was committing some impropriety, when nothing is further from my thoughts. Then off we go, and as I recover my good humor, I give a little playful shake; it does me good, after standing so long in the stable.

Straightway comes a jerk on the bit that almost makes me sit down, and a "Ho now, keep steady, can't you," just as if he thought if he didn't yell at me, I meant to kick things to pieces! I tell you, nothing riles me like being unjustly accused.

Well, when he had done this a few times, he has spoiled all my pleasure in the journey; then I settle down in a dull sort of way, and get into a brown study, on horses' rights or something, when all at once I am roused by a stinging touch of the whip; then I jump, and start off pretty fast to escape

another sting; then he braces his feet and pulls the lines till my mouth is almost bleeding, and it takes me some seconds to find out what he *does* want.

SPEAK FIRST.

Now, if he wanted me to go faster, why didn't he tell me so, politely? When I lived with Dr. McAmble, who raised me, I hardly knew what a whip was; it was only—"Up, Cæsar!" and his low clear voice would rouse me from the deepest meditation. Now, all I ask of any driver is, to do me the justice to speak first, and if I don't mind that, I deserve the whip.

Similarly, when he wants me to stop, instead of using all his strength to stop me by the mouth, let him say, "Whoa, Cæsar," making it sound as if he said—"Stop if you please, Cæsar," and he will see how ready I am to mind.

It is known that I am a finely organized creature, and consequently nervous; sometimes, when I am suddenly yelled at, or hauled two or three ways at once, it gives me such a turn that I haven't the slightest knowledge of what I'm about. Then, if I begin to back, or, out of pure confusion of mind, stand still, he bawls out—"Oh, stubborn, are ye! I'll soon thrash that out of ye!" Then its ten to one that either from terror, or just indignation, I take to my heels and run.

MY MISTRESS TREATMENT.

Well, that's my master. Now, then, here's my mistress. As soon as I hear *her* footstep the water begins to run from my mouth, for I know it means an apple or a carrot, or a lump of sugar or salt. Then, while I'm munching, she pats my neck and smooths my nose the right way, and rubs her little soft hand over my eyes till I shut them up, and begin to grow quite stupid with pleasure. Then she gets in and gives the line a jerk, and says so politely, "Now, old fellow!" and then she keeps on jerking; about a dozen times in a minute, jerk goes that iron against my jaws, till, I declare, if it were anybody else, I'd take it in my teeth and run away with her. Now, I can't talk, but if some of you ladies or gentlemen would only tell her, that all she has to do is to say, "There's a good fellow," and I'll trot till I drop; or, if I *should* happen to be meditating, touch me with the whip—that's legitimate, and I'm not the horse to complain of it; but I can't bear this continual nagging jerk, jerk, jerk at my jaws.

CHECK REINS FOR MEN.

Now, here's another thing; I have heard that you two-legged creatures have succeeded in imitating us so far as to run races on a course. I dare say you do it very well, considering, but how do you begin? In the first place, you dress accordingly, don't you? Leaving every muscle of your body free to move as it will. But suppose, just before you started, I should come and fasten an iron rod across the small of your back, and then with a leather strap tie back your head to the rod behind. You wouldn't like that in running, would you? Well, how would you like it if you had to drag three or four people up hill, with your head hooked back to that rod to keep you from taking an ungraceful position? And what use is it? If a horse has any spirit, and owns a neck that curves easily, he will curve it; if not, all the bearing reins in the country would only make him look stiff. Anybody can see it isn't the real thing.

FINALLY.

I will only add, in conclusion, that horses have rights as well as people,

and feelings as well as people, and that if you want to know how to get the best out of me that is in me, just consider how you ought to manage one of your own children, and you won't go very far astray in managing *me*.

Yours, faithfully, CÆSAR.

Devon Cattle for the South.

The question which is the best breed of cattle for the South, is still open. There are those who give the Devon the preference. We present in our frontispiece a fine portrait of a handsome cow of this handsome breed.

In size the Devon is medium, a well grown ox, in good working condition, weighing from 1,400 to 1,600 pounds, live weight; the cow from 800 to 1,000 pounds. The oxen, as workers, have no equal in proportion to their size. In speed and bottom they are unrivalled. They are among cattle what the thoroughbred is among horses.

As a dairy cow, the Devon may be called medium, in regard to the quantity of milk she yields, but its quality is superior, ranking next to that of the Alderney. For beef they are placed in the first class, their flesh being fine and delicately flavored.

The Devon withstands our climate well, gathers its food easily and is more free from disease than most others. The principal objection raised against the breed, is the comparative smallness of the animals.

Alderney Cattle.

The term "Alderney," the *Practical Farmer* says, is *generic*, and embraces, properly, all, whether from Guernsey, Jersey, Alderney or Sark, which form the group known as the "Channel Islands," situate in the English Channel, about 40 miles from the French Coast. From Alderney and Sark but very few animals have reached this country, the importations having been mainly from Jersey and Guernsey. People sometimes speak of Alderneys and Jerseys as distinct; but it is thought by some that all the dairy stock of the Channel Island were originally derived from that of Britany, on the neighboring coast of France. The Jerseys of the present day, whether from taste or accident, have been bred so as to develop great beauty and delicacy of form; but it may be feared their constitutional vigor has not been strengthened —hence the great importance of a union with the more robust Guernsey, with its fine proportions, and equally valuable milking properties.

Department of Natural History.

Specimens of insects, securely packed, (according to instructions given in our October number,) with letters of inquiry, entomological notes, etc., should be addressed, (post paid,) to Mr. CHARLES R. DODGE, Washington, D. C.

Answers to Correspondents.

PLANT BUG.—"M." The insect sent is the *Harpactor cinctus*, and belongs to the order Hemiptera, which includes the plant-bugs, cicadas, tree-hoppers, plant lice, etc. It is beneficial, and is said to destroy immense numbers of the Colorado potato beetle, in the West. Make his acquaintance immediately. Fig. 4 will serve for an introduction.

Fig. 4.

CRICKETS.—"C. I. W., Charleston." Mr. Uhler, who has given the Orthoptera considerable study, tells me the insect you refer to is the common black house cricket, (always send specimens,) and that they are apt to do mischief at times. They will eat holes in many if not all kinds of fabrics, though it is not known what induces them to do so. If numerous in houses, in addition to trapping them, the cracks in the floors, hearths, around chimneys, etc., which they frequent, should be filled with lime, mixed, if it be used in large quantities, with plaster of paris. Lime is very distasteful to them, and a plentiful coating on the walls, etc., is apt to drive them away.

ORANGE SCALE INSECTS.—Palatka, Fla. See article on the above subject in April number of THE RURAL CAROLINIAN. There were three distinct species on the stem sent by you. We would advise you to read Mr. Glover's experiments with the scale, in the Patent Office Reports for 1857–59.

Grape-Vine Borers.

Every now and then we hear of damage being done to the grape-vine by "the borer." The word borer, however, is a very general term, as whole families of insects might come under the name, though, perhaps, not all of them working in the same tree. The apple borer is *three* different insects; at least, three species are found in the apple tree, and are all called borers. But, to return to our grape borers:

Some years ago, in North Carolina, considerable damage was done to the grape-vine by a worm, (Fig. 1, larva and chrysalis,) which works in the bark and wood of the root. The eggs are deposited on the vine near the root, and in a short time hatch, and the worms immediately commence their ravages. They somewhat resemble the peach borer, and when mature measure about one and a half inches in length. When about to change they construct, under ground, a pod-like cocoon of wood and earthy

Fig. 1.

matter, fastened together with a gummy substance. The perfect insect (Fig. 2) abounds from the middle of June to the middle of September, (in N. C.,) and is described by Harris as follows: Body dark brown, more or less tinged with tawny orange on the sides, and banded with bright yellow on the edge of the second ring of the hind body. The thorax, shoulder covers and the fourth ring of the hind body, are more faintly edged with yellow or tawny orange. The fore wings are dusky; the hind wings transparent, but varied and edged with black. The insect is known by the name of *Ægeria palistiformis*, and has been reported from various parts of the country. The borers seem to prefer the sap wood, as in nearly every instance where roots have been examined the damage has been done, apparently, on the outside, or between the bark and wood.

Fig. 2.

In Missouri, however, the grape borer is a large, fleshy, whitish grub, three or four inches in length, which produces a large *long-horned* beetle, known as the broad-necked *Prionus*, *P. laticollis*. The insect lives nearly three years in the larval state, and towards the end of June transforms to a pupa, it is thought, in the root, and in less than a month the perfect insect comes forth. It is long, oval in shape, pitchy black in color, and measures an inch and a quarter to an inch and three-quarters in length. The jaws are thick and strong, and the antennæ or feelers are long, and in the male are serrated, the thorax is short and wide, and has three teeth on each outer edge. The wing covers are marked with longitudinal elevated lines, and are closely punctured. The species is also found in root of apple, poplar, and, perhaps, many other trees. For two or three years past, they have done great injury to the vineyards of Missouri, and, what is worse, there seems to be no available remedy for their ravages.

A Few Enemies of the Rose.

How annoying to come suddenly upon a choice rose-bush, on which you have bestowed much care and attention, and find the foliage in places blistered and brown, or entirely destroyed; or, perhaps, a whole branch enclosed in a delicate web of silk, "food for worms." It is really vexatious; and as to the remedy, what will destroy one insect will have no effect on another, so the only plan is to know the habits of each insect, and the remedies. As much science is required in insect warfare as in any other kind of warfare and sometimes a great deal more.

The rose-bush is preyed upon by a number of insects. The hairy caterpillars of the *Arctians*, which devour *almost* everything, make it their food, and other caterpillars are found destroying its leaves and flowers; but there are three insects which seem to be special enemies, and of these we speak.

The rose beetle, or, as it is most commonly called, "rose-bug," (*Macrodac-*

tylus subspinosus,) swarms upon it in the beetle or perfect state, devouring leaves, blossoms and all. Although the insect is well known, we give a figure of it for reference. The eggs are deposited in the ground, to the number of thirty or more, and hatch in about twenty days, and the young grubs feed upon the roots of anything that comes nearest to them. They mature before winter, and until the next spring, remain deep in the earth, when they come near the surface and change to pupæ, and finally to perfect insects. The surest way to destroy them is to beat the infested bush over an inverted umbrella, and collect the beetles that fall, and put them into hot water, or otherwise destroy them. The net figured in our last number would prove very serviceable in keeping them down.

Fig. 3

In the early part of summer, the tender leaves of the terminal shoots are often found drawn together and fastened by fine silken threads. On opening this little case, which serves its inmate both for food and shelter, we find a slender, light greenish, or sometimes pinkish, caterpillar, measuring about half an inch in length, when full grown, and covered with very fine short hairs. This is the larva of the *Tortrix rosaceana*, commonly called the Rosacean Tortrix. After it has completed its growth, it carefully lines the interior of its leafy nest with silk, and then, shedding its skin for the last time, assumes the pupa state. No longer a lively greenish worm, but a dark brown chrysalis, it remains quiet a short time, and then, pushing itself half way out of its case, the upper part bursts open and the moth appears. It is of a light cinnamon color, with three wavy brown lines running obliquely across each pair of wings. This little depredator not only infests the rose, but is found on apple, peach, cherry, and other leaves, and, according to Fitch, varies greatly on the different kinds. The only remedy that can be suggested, is to pull off the little cases, or nests, whenever found, and either crush or burn them.

The third species is neither beetle nor moth, but belongs to the order *Hymenoptera*, (bees, wasps, saw-flies, etc.,) and its larva, which somewhat resembles a slug, eats off the upper surface of the leaves, causing them to become withered and brown, as if scorched, and to prematurely fall. Sometimes a whole rose-bush is injured in this way, which is quite enough to kill it, leaving the other insects entirely out of the question. The insect was named by Harris *Selandria rosæ*. The eggs are deposited within the skin of the leaf, and hatch in about two weeks. The larvæ are soft, gelatinous worms, green above and yellow on the underside of the body, and when about to change, descend to the ground and form slight cocoons or cells of earth and silk, about an inch below the surface. The flies that are produced, from these cocoons are of a deep shining black color; the wings are clouded, glossy, with brownish veins, and a dark spot near the middle of the anterior pair. Body of the perfect insect measures one fifth of an inch in length. There are two broods in a season.

It has been suggested to sprinkle lime over the plants when the dew is on,

but the best remedy is that used for a near relative, the currant saw-fly namely: white hellebore, sifted or dusted over the bushes; or it may be dissolved in water and applied with a syringe.

A Trip to the Rocky Mountains.

In company with a distinguished party of agricultural, editors, representing twenty-five to thirty papers and an aggregate circulation of a million copies, I left New York, for a tour of observation and recreation, through the Ohio valley, the great plains of Missouri and Kansas, and the parks and mountains of Colorado. There is represented in this party, agriculture, horticulture, pomology, botany, entomology, rural economy, and rural philosophy. The following is a list of the company: Henry T. Williams, Agl. Ed. N. Y. Independent—treasurer and business manager of the excursion party; J. B. Lyman, Ag. Ed. N. Y. Tribune; S. R. Wells and wife, Ed. Phrenological Journal; F. D. Curtis and wife, Ag. Ed. N. Y. Republican; Mrs. S. O. Johnson, Cor. Country Gentleman; J. R. Dodge, U. S. Dep. Ag.; Chas. R. Dodge, U. S. Dep. Ag. and Rural Carolinian; G. M. Tucker, Ed. Country Gentleman; G. W. Brown, Cor. Norwich Advertiser; R. P. Eaton, Ed. New England Farmer; Thos. Meehan, Ed. Gardner's Monthly; H. L. Reade, E. Cor. Prairie Farmer; Wm. Clift, Am. Agriculturist; J. F. Kirby and wife, Cor. N. Y. Com. Advertiser; Josiah Hoopes, Cor. Delaware Tribune; Wm. M. Canby, Cor. Germantown Telegraph; Geo. Noyes, Ed. Mass. Ploughman; Geo. S. Bowen and wife, Chicago Bureau; Dr. John A. Warder and wife, Cleves, Ohio; Prof. H. E. Marvin, Buffalo Commercial, and J. G. Kingsbury, Ed. N. H. Farmer.

Passing over all that portion of the route, on the Erie Railroad, with its delightful scenery between New York and Cleveland, and the Bee line, Indianapolis and Louisville, and Louisville and Nashville railroads, our first point of interest was the Mammoth Cave, Kentucky. The route from Glasgow Junction to the Cave Hotel, a distance of some eight miles, is through a tract of country that might be made to blossom as the rose, but alas the system of agriculture pursued, is one that would soon turn the most fertile fields to barren wastes. One of the party, on asking the question why the farmers did not manure their worn out lands, was told in reply, that it didn't do much good, *it only lasted a year or two anyhow.* I think The Rural Carolinian would have a christianizing effect, in that locality. But to the Cave. The roads were rough and rocky, with here and there a stump, or a gully that frequently caused anxiety as to our personal safety, but our darkey driver had faith in "them mules," and so we took courage. The Cave Hotel is a

model. The main building is two stories high, with a large open hall or passage running through it, continuing in the long ell part as an open piazza. At the end of this, and at right angles with it, there is another one story ell, one hundred and fifty feet long, mainly built of logs, also with a piazza. All the rooms open out into the daylight, and consequently all have *outside doors.* I would like to say something of the table, but I can only hope it will improve with age. One of our party thought that was just the trouble with the butter. The cave is a wonderful place, and can, and should be made a great Southern summer resort. The temperature in the vicinity is always delightful, the natural scenery fine, and all it lacks is a little enterprise and a little money to make it decidedly first class. I will not attempt a description, as it has already been done by abler pens than mine, suffice it to say, it is well worth all it costs to see it.

Our party also explored Diamond Cave, a few miles distant, which for a small cave, has many attractions and points of interest. On our return to Louisville, we stopped at the Galt House, and had an opportunity of seeing the inside and outside workings of a *truly* first class hotel. Retracing our course to Indianapolis, we soon struck the prairies of Illinois, and many of our party had the pleasure of feasting their eyes upon fertile fields of waving corn for miles in extent, from the cabin of the locomotive. If we were disappointed in Kentucky we were pleased in Indiana, and delighted in Illinois; but after crossing the great father of waters, our admiration was unbounded.

At St. Louis, carriages were provided by the Agricultural and Mechanical Association, and the whole party driven to Lafayette Park, which though small, is yet very pretty. The principal feature here is the statue of Benton, in bronze. He is represented as unrolling the map of the world, as though repeating the inscription in gold upon the base, "There is the east, There is India." From this point we were taken to the extensive gardens of Henry Shaw, situated about —— miles from St. Louis. This is probably the largest private enterprise of the kind in the country, and we were amply repaid for the long dusty ride, by having our senses regaled with the most beautiful combination of color, the sweetest of flowers and the most delicious fruits.

At the fair grounds, which are really magnificent in their style and adaptation. A collation was spread in a convenient building, and for a time we gave ourselves up to the feast of reason and the flow of soul, interspersed with rare specimens of the cullinary art and the products of the soil. At five and a half o'clock we left the city, in charge of the gentlemanly Passenger Agent of the Atlantic and Pacific Railroad, and a few of his aids, bound for the Indian territory, having accepted an invitation to that effect. What we saw and heard in that beautiful country I will tell you in my next.

CHAS. R. DODGE.

Leavenworth, Kansas, July 28th, 1871.

The Cotton Caterpillars and their Habits.

Of cotton caterpillars there are many varieties, but a few only prove damaging. The most destructive are the boll worm, the army worm, and the grass worm. These three, with many others that visit cotton, and injure it to some extent, have been described by Mr. T. Glover, in the Patent Office Report, 1855, where will also be found engravings of the insects, in their different stages of existence, the whole constituting the best history of the worm, and the result of tried plans for its destruction that has come under my observation. Mr. Glover describes minutely the boll worm, (*Heliothes*,) and the corn worm, (*Heliothes*,) and although in his plates he makes them widely different, he thinks they may be the same. Col. Sorsby, he says, has bred both, and says they are the same. I have taken them from the corn and from the cotton boll, and compared them under a magnifying glass, and find them identical except as to color. He also speaks of the cut worm, and gives a plate of the same, but omits to give the moth. I have made a comparative examination of these, likewise with the boll worm, and find them identical, except as to length of dorsal spiracles. His burrowing propensity would account for this. The boll worm makes his cocoon in the earth, as Mr. Glover states, and during the summer months passes several times through his different stages of being, moth, worm and pupa or chrysalis, and hibernates in cocoon in winter. The cut worm evidently does the same thing, and may hibernate as a worm. I have found him full grown as early as 15th March.

The cotton caterpillar (*noctua xylina*) described by Mr. Glover, and commonly called army worm, he makes the great ravager of the cotton, as it indeed is; and this is the caterpillar that first attracted my attention. This he makes to differ from the boll worm in all its stages, and yet differ among themselves. The moths, however, are of the *Lepidoptera* family, Noctua or owlet and *xylina*, or pertaining to cotton. They are of the same class, and have the same number of sections, feet, mandibles and masticatory organs, and pass through the same transformations. As during the summer months they pass into chrysilis or pupa in a bare case, suspended to a twig or leaf, sometimes partially enveloped in a leaf, loosely webbed, and only thus when numerous, it is presumable that instinct guides them; but on the approach of cold weather they seek a warmer covering, and go into cocoon.

The grass worm, (*Locusta*,) as described by Mr. Glover, though preferring grass and weeds, likewise destroys cotton. He says it is often mistaken for the cotton caterpillar, and makes its cocoon in the same way. I have seen both the so-called cotton caterpillar and grass worm suddenly appear in cotton and corn when no moth had been observed; and we know that the boll worm is an annual visitor to cotton, but only doing damage in wet seasons, while the army worm is only a periodical or occasional visitor. The grass worm and cotton caterpillar are of the same parentage, and are each

developed by the same causes. When appearing in great numbers, as the army worm, they would as naturally differ from a boll worm, hatched out singly in the calyx of a flower, or young boll, as a civilized hermit from a savage Hottentot. A single worm hatched out in a young boll or terminal shoot, would then commence his life, and similar food being abundant, would select that in preference; but when numerously hatched out, as it is under favorable circumstances, would take the nearest vegetation, and become almost omnivorous.

I only last season saw the cotton caterpillar appear in grass, and after eating that and corn for a short time, pass to adjoining cotton, and eat every part. This was Mr. Glover's *Noctua xylina.* He describes the grass worm, (*Locusta,*) and says it will also eat cotton. This worm was also examined by me under the magnifying glass, and except as to color, I find it to be identical with the others. Their habitudes and mode of progression are, in my opinion, dependant upon their mode of generation, and they differ in these respects as do men and animals.

Dr. D. L. Phares, of Woodville, Miss., delivered an address in 1869, which was published in your August number of last year, in which he displayed a familiarity with the subject of the cotton worm and its entomology, which entitles him to be regarded as high authority. His address, also, gives earnest of an enlightened practical mind, imbued with a love of truth and science. His entomology tallies with Mr. Glover's, but his personal experience has enabled him to give some philosophical facts that are new and interesting. He treats more particularly of the cotton caterpillar, which he calls "*Anomis xylina.*" He speaks of its periodical appearance, and thinks it owing to meteorological causes that operate to produce cloudy, damp and wet seasons, that recur in regular cycles. He says that when in May or June we have weather of this character, which causes vegetation to become luxuriant and succulent and to run into diseased condition, then the Anomis comes in legions. He tells you how rapidly they multiply from a few moths, and in two or three generations may be in sufficient numbers to sweep over large tracts of cotton, leaving it bare and black. Neither he, nor any one else, has explained how it is that they will suddenly appear and destroy, as the worm, before any moth has been noticed. The observation of this and its cause led me to my remedy. He also speaks of a confusion of generations that was unaccountable on entomological rules, but is to my mind quite natural, and entirely compatible with its modes of generation. He likewise thinks that large numbers of moths may be borne on the winds for hundreds of miles, as they sometimes appear in great numbers where they were not noticed before. They are natives of our latitude, and always have been. Previous to the introduction of cotton they ate other vegetation, as they do now in the absence of cotton. Because they affect cotton, does not prove that they eat nothing else. It is an ascertained fact that they do eat other vegetation than cotton, but they are only interesting to man when an enemy to cotton, and hence but little care has been bestowed upon their forest life

or general habitudes. They would naturally select food that would furnish aliment and fibre for cocoons, and instinct would unerringly guide them in their selection.

They hibernate in cocoon pupa and egg, and it is said in their moth or adult state. I have never seen a cotton moth or miller earlier than May, or later than October. My belief is that they remain but a short period in that state. The propagation of their species is effected in that state, and that accomplished they soon die. I infer that the most of the Lepidoptera do as the *Bombyces* and drop worm are known to do, the male soon after copulation, and the female after laying her eggs. If the cotton worm is an exception to the general law of its congeners, it has yet to be discovered. The idea that a female that had not laid her eggs, might hibernate, is not tenable, as an impelling necessity, applicable to all the ovipera, would force her to lay them as soon as matured or fecundated. Except in hibernation, each transformation is of short duration.

Every planter must have observed that they will appear as the worm, in grass, where cotton had been planted the previous year, and in cotton, where corn had been cultivated the preceding season; and many have observed what both Dr. Phares and Mr. Glover remarks upon, (viz.,) that they will destroy cotton up to a line, not cross the furrow. Hot and wet weather is the most favorable condition for their development and increase, as is patent to all observers, but there is an occult cause, which has thus far escaped observation, that acts like the magician's wand in producing its millions, and which alone can evoke them for destruction; and this is entirely within the control of any planter, and can be put in effectual operation without money or labor.

Dr. Phares is correct in making them simultaneous with the diseased condition of the plant, but their appearance is a mere coincidence, and in no way dependent upon the state of the plant.

In my manuscript, about which I wrote you, Mr. Editor, in March last, and which I then intended to publish at an early day, I have endeavored to explain many phenomena in connection with this subject that are at present mysterious, but with the aid of a practical fact, are rendered clear and demonstrable upon known physical laws.

I am anxious to place this manuscript, in which is described a plan for the successful prevention of the cotton worm before the public, and will do so as soon as I can make arrangements to secure to myself a just remuneration. My plan is to place it in the hands of some public functionary, State Legislature, for instance, or Executive, and let it be freely published. If it fails, let it pass into oblivion, but if it succeeds and proves a lasting boon to the cotton interest, let the cotton crop of one year pay me a moiety. This is equitable as none but beneficiaries will pay, and they lightly in proportion to benefit received.

E. H. ANDERSON.

Kirkwood, Miss., July 17th, 1871.

THE RURAL CAROLINIAN.

VOL. II.] CHARLESTON, S. C., SEPTEMBER, 1871. [No. XII

"*Progress with Prudence, Practice with Science.*"

D. H. JACQUES, EDITOR.

PATRONS OF HUSBANDRY.

We have several times, in these columns, called attention to this new Order. We believe it a good institution, and calculated to do good; and there is no part of the country where it is so much needed, or where it may be made the means of so potent an influence as in these Southern States. The advantages which it offers are those which we *especially* lack. For instance:

1. Systematic arrangements for procuring and disseminating, in the most expeditious manner, information relative to crops, demand and supply, prices, markets and transportation throughout the country; 2. The purchase and exchange of stock, seeds and desired varieties of plants and trees; 3. Procuring help at home or from abroad, and situations for persons seeking employment; 4. Ascertaining and testing the merits of newly invented farming implements, and those not in general use; 5. *Detecting and exposing those that are unworthy, and for protecting, by all available means, the farming interests from fraud and deception, and combinations of every kind;* 6. The intellectual, social and moral improvement of the rural population, through the pleasant intercourse and impressive and instructive ritual of the Order.

For the want of these advantages we are exposed to constant losses and disappointments. We cannot gain them, to the same extent, in any other way than by becoming members of this beneficent Order—the farmers' own organization.

Our thoughts have been directed to this subject, more particularly, at this time by a letter just received from a well known and influential planter in Georgia, who desires information in regard to the organization of Subordinate Granges; one of which he proposes to establish in his own neighborhood. He says:

For upwards of thirty years have I felt the urgent necessity of such an organization in the South—especially in the Cotton States. I regard it *now* as being more urgently demanded than at any previous period of our industrial history, and being the most popular movement that can be inaugurated within this generation.

The farmers of Charleston County have taken a similar view of the Order; and, acting upon it, Ashley Grange, No. 1, now counts among its members many of the best and most intelligent agriculturists and horticulturists of this vicinity; and others are at the gate asking for admission. If found worthy, we have no doubt the Overseer, with our Worthy Master's permission, will give them Work in the Field.

We urge no one to connect himself with this Order. The Order does not ask favors, but confers them. The gates of the Grange are closed to keep out the idle and the vicious; and worthy persons who desire to come in from the hope to do good and get good, must seek admission of their own accord, and in the proper form. Information concerning the Order can be procured of the General Deputy, at this office, or of Bro. Wm. E. Simmons, Special Deputy, Charleston; and the latter is authorized and prepared to organize new Granges in any part of the State, whenever application shall be made by clubs that have taken the necessary preliminary steps.

THE GOPHER OR FLORIDA CART.

A cart has been a cart hitherto, and nothing more or less. We have had "improved" ploughs, harrows, planters, hoes, reapers, every

other kind of farm implement, in brief, but the cart—a vehicle which everybody is obliged to have and use on a farm—has remained essentially the same, for we know not how many generations. It was a lucky thought to bring inventive genius to bear upon it and the result has been all that can be desired.

Several of our Florida correspondents have mentioned a new labor-saving cart as in use there, but no adequate idea of it has been conveyed by their descriptions. It is no myth. We have *seen* the Gopher Cart and its modest, unpretending but most ingenious inventor, Dr. Ze. Butt, of Ocala, Fla.

The first thing that strikes one, on looking at the improved cart, is the lowness of the body, which hangs near the ground for convenience in loading—an advantage which every farmer will appreciate. This position of the body is secured by an arrangement equivalent to a crank axle, the wheels being five feet in diameter, and having a broad tread to facilitate their movement over soft or boggy ground. The ease with which such a cart can be loaded is astonishing. It is unloaded by tilting the body, as with the ordinary cart, the load being dumped behind; but here comes in play another improvement. The tail-board is adjustable and self-acting, opening a broad throat from which to disgorge the contents of the cart, when it resumes its position. The body also falls back to its original place and is fastened by its own action.

The body of this cart is so constructed and mounted that in ascending and descending hills, the load adjusts itself, so that the pressure upon the back or neck of the team is always nearly the same. The draught is also applied to the greatest advantage, being upward as well as forward.

By means of additional adjustable sides, the Gopher Cart may be adapted to every kind of plantation work—to hauling manure, rice and other grain, hay, wood rails or anything else for which a cart or wagon is used. It is simple in its construction, strong, not liable to get out of order in any way and can be managed by a boy, or by the most ignorant laborer. In short, it is a labor-saving cart, with such great and obvious advantages over the ordinary one, that wherever it shall become known no other will be wanted.

The Gopher Cart is not exactly a new thing, having been in use in Florida for over five years, giving entire satisfaction.

Several of these carts have lately been built in this city (under the superintendence of the inventor) for neighboring planters, and orders for others have been received. We trust that arrangements for their extensive manufacture will soon be made, for they will be in demand everywhere, North as well as South.

A model of the Gopher Cart may be seen at this office, where also, for the present, orders may be left for it.

CLOSE OF THE VOLUME.

The present number of THE RURAL CAROLINIAN closes the second volume, and finds our magazine firmly established on the permanent basis of assured success. We know that our friends and patrons will rejoice with us in this evidence of interest in improved agriculture and true progress manifested by our people. There was a widely felt want of a sound, high-toned, scientific and practical agricultural magazine in the South, and we have been fortunate enough, with the assistance of our corps of able contributors, to meet this want. We feel a justifiable pride in this result, but shall not allow ourselves to sleep on our laurels. We have tried to make a good and practically useful, as well as an interesting magazine. Our readers are the best judges of our success. We are now determined to make it, during the ensuing year, still better, in many ways; and with increased experience and new contributors, we have reason to feel sure that we can do it. Beyond this simple expression of our purpose, and the grounds of our faith in its accomplishment, we have no promises to make, and there shall be no blowing of trumpets in advance.

We now have readers in every State in the Union and in most of the countries of Europe, Asia, South America and the Tropical Islands, and our circulation is constantly extending.

We are not accustomed, as our patrons well know, to annoy them with appeals for

new subscribers or for help of any kind; but we are, of course, glad to increase our subscription list, not only for our own profit, but that our sphere of influence and usefulness may be extended; and with the new volume, to commence with the October number, will be a favorable time to subscribe.

THE SELF-ACTING WATER GATE.

COL. JACQUES:

Dear Sir—I see a cut given in your July number of THE RURAL CAROLINIAN, of a watergate designed by myself, and your note appended, in which you say "if the originator of the plan will again send us his name, he shall have due credit."

When I first drew the design, (it is an improved copy of such a gate now on my plantation,) I thought of applying for a *patent*, but reflection induced me to send it to you for illustration in THE RURAL CAROLINIAN, that being a free will gift a greater number might become benefitted.

Very respectfully,

J. H. BARGER.

Eutaw, Ala., July 15, 1871.

OUR INDEX.

We published with the last volume a carefully prepared index, embracing all the principal articles published during the year; but in making use of it, we have been impressed with the desirableness of a still more complete alphabetical list of subjects, including even the smallest items when they may be of any permanent importance or value. The index of the present volume, herewith presented, will be found exhaustive, and will leave, we trust, nothing to be desired. We hope it will be often consulted.

Making an exception to our rule, in favor of those great friends of the poor benighted Southern planter, N. P. Boyer & Co., we give that enterprising "firm" the benefit of several pages of gratuitous advertising in this number. Everybody wanting "pure bred imported stock," should read "Swine and Swindlers," p. 680, and learn where to send or it.

An article from Mr. L. A. Hansen, in reply to Dr. Pendleton's "Land or Labor," came to hand too late for publication in this number, as did a brief communication from Mr. A. B. Allen, on a question of much interest to the planter.

FARM AND GARDEN NOTES.

Jute as a Southern Staple.

The Ramie question is getting thoroughly discussed, and the problems involved in its preparation and sale are, we have reason to hope, in a fair way to a practical solution. We fully sympathise with those who are so zealously striving to bring that magnificent fibre to the test of actual experiment, as an article of manufacture and commerce; but let us not, while casting about for means to diversify our industry, confine our investigations to one or even a few of the productions of other countries which seem adapted to our climate and soils. Jute grows here as luxuriantly as Ramie, its preparation for market presents no difficulties, and a market for it is assured. It is cut about the first of September; put in bundles, steeped in fresh water for a week, and the bark stripped off and treated in the same way as hemp. Specimens in our garden, from seed received from the Agricultural Department, though planted very late, are now from ten to twelve feet in height, and of a very thrifty appearance. It seems to thrive best on moist rich land.

Charcoal as an Absorbent.

Charcoal is an excellant material to compost with hot manures, its absorbent powers being very great. The lighter and more porous charcoals are the best for this purpose, but not for fuel. Charcoal from pine, poplar and willow absorbs nearly one hundred times its volume of ammonia. Where it can be obtained cheaply, as from the beds of coal kilns in one's neighborhood, it can often be used with profit.

Experience in Flower Gardening Wanted.

We have the best evidence that the occasional hints on floriculture that find a place in THE RURAL CAROLINIAN are read with interest and fully appreciated. Many, ladies especially, regret that there is not more on this subject in our pages. So do we. But we look to the ladies to help us in that matter, and (we are sorry to be compelled to say so)

they don't do it. If you wish to make the Horticultural Department interesting and useful in this respect, you must aid in doing it. The farmers send us their experience with corn and cotton, you must tell us how you grow pinks and pansies. With what flowers have you succeeded, and what have failed? What flowers will withstand our hot sun in the open ground? What plants are best suited to shady situations? What seeds shall we sow in the spring and what in the fall? How is it best to treat bulbs (generally and particularly) in this climate? Light is wanted on these and numerous other questions. Will not our lady gardeners respond?

Fruit Growers to be Astonished.

According to the New York *Day Book*, a patent has been applied for and will be introduced to the fruit-growing public in a few months that will astonish horticulturists. It is a discovery of an application by which the pear or apple tree may be thrown into bearing at a very early age, and kept loaded with fruit steadily year after year. The principle by which this result is produced is not made known, but we are told that to prove its correctness any apple or pear tree of four or five years of age or upwards, which has never blossomed, can be made to show blossoms on one-half of the head of the tree, while none appear on the other half. The application is not in the slightest degree injurious to the tree, as its continued state of high health under the yearly yield of large crops of fruit demonstrates. Any fruit grower can make the application. It is done instantly, and costs nothing except the cost of the patent right. We shall be glad to be astonished. We begin to be astonished already!

Making Beet Sugar.

The experiment of making beet sugar in this country has been thoroughly tried by the Germania Company at Chatsworth, Ill., and the result is not very encouraging. The company owns 2,400 acres of land, and is provided with all the appliances for the manufacture of the commodity, the mechanism having been, for the most part, imported from Germany. One of the obstacles to success there is believed to be the presence of large quantities of saltpetre in the soil, which seriously affects the sugar beet. In California, on the other hand, the manufacture of beet sugar seems to promise complete success.

Flower Seeds for Fall Planting.

There are many kinds of flowering plants that are grown here with great difficulty, or fail altogether if sown in the spring as directed in Northern catalogues and books; but which succeed admirably by fall sowing. There are others of which, by a second planting in August or September, we get two distinct crops of bloom. The Zinnia, the Balsam, and the French Marigold are of the latter class. The pansy does not succeed at all—at least that is our experience—in open air culture if sown in spring. The same is true of violets (from seed.) Poppy, larkspur, mignonette, sweet alyssum, nemophila, wall flower, and many others are apt to die off before getting well established; or if they bloom, it is imperfectly or briefly. Pinks, carnations, sweet Williams, stocks, hollyhocks and Gillias are difficult to carry through our severe heats and drouths. It is well to make sowings of these and others at various times from August to October, having the ground well manured, deeply stirred and in the best tilth.

Datura Wrightii.

One of the finest of the large flowering plants, for borders or lawns where there is plenty of room, is Wright's Datura or Trumpet flower. The plant is branching and of a somewhat drooping habit, and a single one on our grounds covers a space of twelve feet in circumference. It has had more than twenty of its fine, large, fragrant flowers in bloom at one time. The flowers are white, tinged with purple, trumpet-shaped, and from seven to nine inches in length. The plant is a perennial and, in this climate, the roots require no winter protection.

The fall crop of Irish Potatoes.

We have hitherto found it difficult to get a stand for our fall crop of Irish potatoes, many of the sets failing to sprout in time to give the plant a chance to mature. This year, several weeks before the time we purposed to plant, we selected some fine sized and well ripened specimens of the Early Rose, spread them on the ground in a moist, shady spot,

covered them with two or three inches of soil, threw some litter upon that, and occasionally watered the bed during drouth. When ready to plant, we found nearly all the tubers well sprouted, and planting only such as were so, we secured a perfect stand at once.

INDUSTRIAL ITEMS.

Robert Mure & Co. and John Hanckel, proprietors of cotton presses in Charleston, give notice that they will, after October 1st, require all cotton sent to their presses to have *six* bands; otherwise a charge of ten cents per band will be made for deficient bands. Planters will please govern themselves accordingly.

——We are pleased to observe that at least one branch of manufacturing industry is flourishing in this city—that of doors, sashes and blinds. There is no reason why a dozen other similar industries may not meet with the same degree of success, if conducted with the energy and business tact which Mr. P. P. Toale has brought to bear upon his enterprise.

——The *Journal of Agriculture* urges inventors to concentrate all their powers on a simple and very cheap rice huller—so cheap that every man who is able to own a coffee mill or a sausage grinder could afford to buy one! We want such an invention above all things, to enable each one of us to grow and prepare rice for his own family use. Almost every plantation south of thirty-three degrees north latitude will grow upland rice very well, and yet few persons undertake to produce it, owing to the fact of the great cost of getting it hulled. There is a fortune in such a machine, if it can be made, and who shall say that it can not?

——The *Columbia Union* says that the machinery for the Carolina Broom Company is being fast put in working order, and that the Company will very shortly commence work in earnest. The Company has several enterprising young men in it, and we are glad to note this advancement in the matter of manufactures. Orders have been liberally sent already, and only the necessary arrangement of machinery prevents them at present from commencing operations.

——We learn from the *California Farmer*, that the Alvarado Sugar Co. bids fair to be successful in the manufacture of sugar from the beet root; having been in operation only a few months, they have consumed about 3,000 tons of beets, and made half a million pounds of sugar.

LITERARY NOTES AND NOTICES.

The *Atlantic Monthly* for August, has several noticeable articles, from one of which we make some extracts in another place. W. D. Howells continue "Their Wedding Journey," and Henry James, Jr., commences a new story, entitled "Watch and Ward," in which he gives his peculiar genius full play. "H. H." gossip very pleasantly in "Encyclicals of a Traveller," and two poems of no particular merit help to diversify the pages, at least. James R. Osgood & Co., Boston; $4 a year.

—— *The American Exchange and Review*, is a literary and industrial monthly magazine conducted with great ability and industry, and having for its special topics Finance, Insurance, Manufactures, Railways, Commerce and Social and Economic Science. Philadelphia, Review Publishing Company; $3 a year.

—— *Every Saturday* comes to us from the well known publishing house of Jas. R. Osgood & Co., Boston, and is one of the best—perhaps the best of all—of the American illustrated papers. It has for its "continued story," Charles Reade's "Terrible Temptation." Ten cents a number; $5 a year.

—— *The Technologist* is a handsome and instructive illustrated journal of the Industrial Arts, the August number of which we have received. Industrial Publication Company, 176 Broadway, New York; $1 50 a year.

——The *British Quarterly Review* gives its idea of an American newspaper as "that of a print published by a literary Barnum, whose type, paper, talents, morality, and taste, all are equally wretched and inferior; who is certain to give us flippancy for wit, personality for principle, bombast for eloquence, malignity without satire, news without truth or reliability."

—— The titles of the principal Hindoo news-

papers are, *The Ambrosia Leaf of the Market; The Rays of the Sun; The Punjaub Bird of Good Omens*, and *The Sun of News.*

—— That admirable monthly magazine for youngest readers, *The Nursery*, proves so attractive to somebody that it seldom reaches our desk; but we see by looking over the August number, which we were fortunate enough to get, that it keeps up its interest and beauty fully to the mark. For boys and girls just beginning to read, it is worth ten times its cost. John L. Shorey, 36 Bloomfield street, Boston, Mass.; $1 50 a year.

——The *Live Stock Journal*, published by Springer, Best & Co., Buffalo, N. Y., has just commenced a new volume. Its contents embrace articles on a wide range of topics connected with the subjects of the dairy, horses, cattle, poultry, sheep, swine, bee management, fish culture, a turf record of the month, and other live stock matters.

——*The American Oddfellow*, always readable and entertaining, has passed under the management of Mr. Orange Judd, who has assumed the presidency of the American Oddfellow's Association. A. O. F. Association, New York; $2 50 a year.

—— *The Folio*, one of the spiciest and liveliest papers of its class, (or any class) is said to have a circulation larger than that of all other music papers combined, offers to send a specimen copy, containing over one dollar's worth of new music, beautiful songs and piano pieces, to any one, *free!* Address White, Smith & Perry, Boston, Mass.

MERE MENTION.

It will be seen by his letter in another place that our Entomologist, Mr. Charles R. Dodge, is making a vacation excursion to the Rocky Mountains. We wish him much pleasure and a safe return. The "bugs" of the Colorado Parks will suffer!

——In England, the extent of land covered with trees has increased forty thousand acres in the last thirty-five years, and tree planting is encouraged among land holders by liberal premiums.

—— The Tennessee Agricultural and Mechanic Association, after mature deliberation and consultation with the Agricultural Bureau at Washington, invites a Congress of the various kindred societies throughout the United States, to meet in convention at Nashville, Tennessee, on the 3d day of October, 1871, for the purpose of forming a National Agricultural Association.

—— A species of native palm grows luxuriantly in the canons on the eastern slope of San Bernardino Mountain, California. It bears a small black fruit of a sweetish taste, which is highly prized by the Indians as an article of food.

——William Kee, of Bodega Point, raised and sent into the San Francisco market last season, from three and a half acres of land, $3,000 worth of Cabbages.

——A new kind of fodder plant (*Gymnothrix latifolia*) has recently been introduced into France from Uruguay. It is not unlike the sugar-cane in appearance, grows eight or nine feet high, and is said to make excellent fodder either when green or cured.

——We observe, by a New Orleans paper, that Mr. A. Bouchard, of that city, has just received a patent for a new Ramie Machine, which will, it is claimed, remove all the difficulties of the case. We supposed they had already been overcome by Mr. Lefranc's machine.

——The Agricultural Society of Breslau, Germany, offers a prize of $700 in gold for the steam plough apparatus which will work best at trials to be made on farms near that city.

——A writer in the *Gardener's Monthly* asserts, and we believe truly, that the Piedmont region of Virginia, and the hills of North Carolina, produce the best apples in the world.

——Last year we imported more than nineteen millions pounds of jute, at a cost of three millions of dollars, though the plant could readily be raised at the South, where it is used extensively for bale-cloth.

——The newest wonder at the West is a soda lake near Rawlings, on the Union Pacific Railroad, several miles in circumference, and capable of supplying 65,000 tons of soda a year.

FAIRS AND PREMIUM LISTS.

South Carolina State Agricultural and Mechanical Society Fair, at Columbia, Nov. 6th–11th. For Premium List, address Col. D. Wyatt Aiken, Secretary, Cokesbury, S. C.

——Cotton States' Mechanics' and Agricultural Fair Association, Augusta, Ga., October 31st to November 4th. For Premium List, address E. H. Gray, Secretary, Augusta, Ga.

——Planters' Manufacturers' and Mechanics' Association of Mississippi, Jackson, Miss., October 23d to 28th. Address J. L. Power, Secretary, Jackson, Miss.

——The Cherokee County Fair Association for Georgia and Alabama, Rome, Ga., October 10th–14th. Address B. F. Jones, Secretary, Rome, Ga. Agricultural magazines and papers are offered as premiums—a good idea which all such Associations should adopt.

——Alabama Agricultural and Mechanical Association, Montgomery, Ala., October 16th–20th. Address Hal. T. Walker, Montgomery, Ala.

——Georgia State Agricultural Society, Macon, Ga., October 23d. Address D. W. Lewis, Secretary, Macon, Ga.

——Atlanta Agricultural and Industrial Association, Atlanta, Ga., October 16th–20th. Address Samuel A. Echols, Secretary, Atlanta, Ga.

——Columbus Industrial Association, Columbus, Ga., October 31st to November 4th. Address John F. Iverson, Secretary, Columbus, Ga.

——Putnam County Fair Company, Eatonton, Ga., October 11th–13th. Address Robert Young, Jr., Secretary, Eatonton, Ga.

——Agricultural and Mechanical Association, of West Alabama, Eutaw, Ala., October 17th–22d. Address J. H. Barger, Secretary, Eutaw, Ala. [Thanks from all of us—editor and publishers—for the Honorary Life Membership conferred by this enterprising Society, and for the special invitation to attend the Fair.]

——Cincinnati Industrial Exposition, Cincinnati, Ohio, commencing September 6th. Address H. McCollum, Secretary, Cincinnati, Ohio.

——St. Louis Agricultural and Mechanical Association, St. Louis, Mo., October 2d–7th. Address G. O. Hall, Secretary, St. Louis, Mo.

DEPARTMENT OF CORRESPONDENCE AND INQUIRY.

NOTES ON THE AUGUST NUMBER.

Editor of The Rural Carolinian:

The crop is "laid by," and as the XVth Amendment will take a resting spell, the proprietor may as well indulge a little in a chat over your last.

"*Timely Hints on Small Grain.*"—A sensible, well timed leader; "*Ante bellum*" we were successful in sowing small grain over our cotton fields to prevent the leaching by winter rains, and for pasture; but "*post bellum*," the seasons have been so unfavorable that we have failed. But what about the Hessian? Wheat sown in September or October is almost sure to be ruined by the fly. We have made a perfect failure in wheat this year from rust and fly—the first "dead failure" in an experience of twenty-seven years.

"*Land or Labor.*"—Dr. Pendleton has put these "vexatious questions" in a strong light. "High farming" will never pay in our humble opinion, with cheap land or sparse population and freed labor.

"*Disadvantages vs. Advantages.*" — Mr. Jones is right; we are in the habit of putting too much red in our brush; better tell the drawbacks plainly. The 8th and 9th are the worst and most unmanageable—the loafers, white and colored, are the greatest curse of this "land we love." Too many people think that they were born "*fruges consumere nati.*" It is not confined to the South either; it is the burden of Northern complaint too, and, unfortunately, the northern loafer finds it more profitable to emigrate.

"*Brazil Nuts and Rio Coffee.*"—Your Brazil correspondent has given a graphic and interesting letter. The old folks and the youngsters have enjoyed it hugely.

"*Cultivating Corn after it has Tasseled.*"—Max is, doubtless, right; but suppose it rains and rains, or stops raining altogether, or the XVth Amendment dodges the question? Sure enough!

"*Black Rust in Cotton.*"—The Major thinks that he has solved the problem, but is he sure whether it is "*post hoc or propter hoc.*" Insects always attack diseased or unhealthy plants. As to "bud worm," we have found all land subject to its attack, which had been at rest, and particularly such as had grown up in weeds. We were under the impression that the bud worm in corn was the product of an insect which laid its egg on the first leaf, and after hatching out the worm ate its way downward and came *out*, where the Major thinks it went *in*. Did the Major

find the *worm?* We have examined hundreds of stalks of corn without finding a worm. We are satisfied he goes downward, because the bud does not wilt until he cuts his way out. We have followed a row of corn to the end, and on returning found stalks with wilted buds which, a few moments before were green and looking healthy. If the worm went in *below* the bud would die at once. We have found the best preventive to plant very early so that the bud leaf may be too hard for the worm to operate on, or very late, as his ravages seem confined to a limited season.

"*Clover and Rotation.*"—F. W. J. speaks of what he thoroughly understands. We have heard his farm spoken of as a model; but we have found sowing clover in February the surest in the belt below the mountains—but it is an uncertain crop. A field of four acres, which was knee high on the 1st of June, now, after a five weeks' drouth, looks anything but promising.

"*Are we Ruined?*"—Yes, there is no use trying to shut our eyes to the truth; still, it is the duty of every man to do his utmost to reconstruct. Some lucky carpet-bagger wrote that article.

"*Notes on Fruits and Vegetables.*"—Very good and apropos.

"*The Merino Sheep Question.*"—Col. Watts' calculations are flattering; but what about the dogs and the XVth Amendment?

"*The Labor Question in Louisiana*"—Seems to be quite as much a "lion in the path of progress as amongst us." "Get the best white laborers," says F. W. J. Ah! there's the rub. The European laborer may be for awhile a good tenant, but democracy, barbecues, shooting matches, and the glorious franchise, will soon make him a bigger man than the boss.

"*Farm and Garden Notes.*"—Very good. By the way, that Southern Gardener, by Mr. Ravenel, is just the thing; all to the point, and fits the pocket every way.

"*Hill-Side Hedging.*"—Your Fairfield correspondent is quite touchy upon his hobby, and appears restive under the "hop-and-a-jump go style" of "your contributor." If the gentleman is somewhat familiar with the Monticello neighborhood, and can go "a long way back into the Agricultural Journals," he, doubtless, knows as well as your contributor, who tried it about Monticello and the results. Did your contributor say it had been discussed in the Agricultural Journals? Your contributor has tried it and seen it tried by others, and is perfectly satisfied that it looks better on paper than on the land. "Buster" seems to be somewhat of the same opinion. How does Fairfield like his style?

We are sorry to report unfavorably of the crop prospect. No rain now for five weeks at the most trying season. Upland corn is pretty well spent, and cotton looks most unpromising. Even the Lespedeza is dry enough for the torch. * * *

August 1st, 1871.

CHICKEN CHOLERA.

Editor of The Rural Carolinian:

This disease, so much dreaded by poultry raisers, has within the last number of months, played sad havoc with the feathered tribe hereabouts. As soon as it made its appearance among my poultry, I resorted to the use of salts, given in solution with grist, as a preventive. The progress of the disease was at once arrested, no new case having occurred afterwards. The idea in giving salts was to cleanse the bowels, which, in the cases of the birds attacked, were much disordered, and thereby remove the seeds of the pestilence. A teaspoonful to every half dozen adult fowls was about the quantity given, the dose being repeated every other day for ten days. I am much inclined to the belief that poultry not unfrequently die, after being attacked by cholera, more from starvation than from the effects of the disease; and that if carefully attended to, and supplied with clean fresh water and good wholesome food, (nothing better than soft hominy or mush,) but few cases would prove fatal.

Chickens, when attacked, at least such is the experience of the writer, though seldom refusing to eat when fed, have but little inclination to go in search of food, but will remain pretty much in one place until, for the want of nourishment necessary to sustain life, death ensues.

The first cases that came under my observation, seven in all, proved fatal. The treatment above indicated, having been resorted to in the eighth, the patient recovered.

I have but recently, Mr. Editor, made the acquaintance of The Rural Carolinian, and it affords me pleasure to add my testimony to that of the many in favor of its excellency as an agricultural journal. It is, by far, the most entertaining and instructive acquaintance it has been my fortune to make for some time. I see and read it now through the kindness of a friend, though hope to read it before long as my own property.

For the last several years I have made the subject of pork making, as the doctors would say, a speciality, and think I can safely venture the assertion that I have discovered the easiest, cheapest, and best way to make bacon. In saying as much, many of my neighbors will bear me out.

I will endeavor, ere long, should you desire it, to say something of my plan, which time will not permit me to do now. I will, however, say this much, that were I desirous of raising only bacon enough for home consumption, I would do away at once with brood sows, and would not have, as a gift,

the finest Essex or Chester white sow in the State, with the understanding that I was to keep her for breeding purposes.

A. G. S.

St. Matthews, July 18, 1871.

RAMIE FOR PROFIT.

Editor of The Rural Carolinian:

The intention of this article is to complete the statement in your August number, page 648. Concerning the value of the Ramie as a forage plant, I wish to state to your readers the following facts, based on experience:

The plant when not more than eight to ten inches high, makes an excellent food for neat cattle, (horses are not fond of it,) but it must be cut and brought off from the field or patch. As soon as it has reached a larger growth, the stems get woody and cattle will not eat them.

In planting Ramie, it is the fibre which brings the "yellow birds" In breaking the stems, the leaves and the gummy mass, which is extracted, furnish, when salted, an excellent food for hogs. If the leaves after passing through the machine are shaken out and cured, they make an excellent hay—horses eat it then. The woody fibre of the stems is excellent paper material. So if the leaves are taken out and cured, the broken stems also separated, we have then left a gummy mass, which contains a large per centage of nutritious material. So we have three different products, besides the finest of all vegetable fibres.

It is truly gratifying to me to see an earnestness in this business, as I have been the first in the South who wrote a practical treatise on its culture, and I see that close observers verify my statements. I enclose you a pamphlet, which I wrote in January, 1868.

I can spare one million of roots, (at $10 to $12 per thousand) and will yet save sufficient to start a plantation this coming fall in Florida.

G. Hunziker.

Summit, Pike Co., Miss., Aug. 4th, 1871.

VERMIN ON SWINE.

Editor of the Rural Carolinian:

Take of strong ley soap two parts, and oil of turpentine one part, and warm them together, stiring in the mean time, so as to thoroughly mix. Apply while warm, to spine, flanks and ears. Repeat in about ten days, to destroy any that may have escaped. I have never seen any bad results from it.

G. R. D.

INQUIRIES AND ANSWERS.

"A Beginner in Farming" writes: "I have seen in your valuable monthly, at various times, the advice given to turn under peas as a green manure. Is this possible? If possible, how is it to be done, as the asker of this, relying upon your advice, has planted peas to turn under, but can find no plough nor ploughman able to accomplish the getting the peas under. Dr. Rose, the best of authority in these diggings, says it can't be done. Now let us know who can do it and how." We have recommended peas as an excellent green manure for *poor thin soils* and have turned them under repeatedly, and many others have done the same—the peas being sowed broadcast—but we can readily conceive of a crop planted in drills on tolerably good land, making a growth that cannot be ploughed in without using a very large plough, and turning over the ground deeper than might be desirable. We recommend clover, too, for the same purpose; but have seen many a crop that would bother "Beginner," or anybody else, as green manure, and would have to be cut for hay.

——T. H. K., Miss., wishes to know "the best time to plant a strawberry patch so as to get a full crop next spring; also, the best kind for market and the best for family use." For a small patch, where we could give it proper attention and water if necessary, we would plant in September; but as the weather is liable to be hot and dry, if planting on a large scale, where watering would be impracticable, we should defer till later—say the first of November. We cannot tell what kinds will do best with you, but Wilson's Albany and Longworth's Prolific for market and Triomph de Gand for either home use or market, are likely to do well anywhere. See article on Strawberries in this number.

——"Florida." We cannot endorse Mr. Berckmans' recommendation of rice chaff for mulching strawberries. It is a fine thing in theory, but in practice the wind blows it off, and leaves the ground bare. That is our experience with it. It might do about the plants with coarser mulch between the rows to hold it in its place. "Anclote's" communication is in the number for February, 1871.

——W., Alabama. The plant sent is, as we conjectured before, Cuba Grass, (*Sorghum halpense,*) too well known in many parts of the South as "Means' grass." We are sorry to say that no *means* of eradicating

it has, to our knowledge, ever been discovered.

——M. A., Eufaula, Ala., has an oak grove in front of his house, which he desires to seed with grass or clover for the benefit of his calves, and wishes to know what to sow, and when, and where the seed can be procured. He wants a perennial grass. There is considerable shade. Can any of our readers advise him? For a hedge plant, see article in THE RURAL CAROLINIAN for Sept., 1870.

——H. P. inquires how to prepare black moss—that is cure the long moss of our forests. We presume he knows the ordinary slow process of rotting it. Has any one an improved method? We know no variety of cotton by the name of "Okra Cotton."

——In the absence of our consulting chemist, who is out of town, we can not answer definitely "A Subscriber's" query in regard to oak ashes; but do not think that their value will be much affected by the absence of the bark from the wood.

——To "An Inquirer," Charleston, we can only say that we know nothing of the stock-raiser to whom he refers.

——L. D. C. wants a remedy for crib-biting or stump-sucking (as it is called) in horses.

——H. P. wishes some one to publish, in THE RURAL CAROLINIAN, an article on "Rice Culture on River Plantations, Rice Machinery, etc."

——"York." For the information you require in reference to Harvard College, address Charles W. Elliott, LL. D., Cambridge, Mass.

——The plant sent by R. T. B., Navidad, Texas, is evidently a species of *Medicago* or Lucerne, for which *Alfalfa* is the Spanish name, but it differs from the species we cultivate here, and from that received from California as *Alfalfa*. We will try it.

LITERARY AND HOME DEPARTMENT.

THE FOUNTAIN OF YOUTH.

"Eodem tempore de prodigioso quodam fonte fama increbruerat, cujus aquis epotis, senes exuta canicie in juventam revirescerent: neque eam fabulam cupidius sparserant Indi, quam crediderant nostri. Eam famam sequuntus Pontius, dum circa eas insulas, fontem illua fabulosum quaerens senescit potius quam repubescit, sex amplius menses irrato errore absumit."

Benzoni "Novae Novi Orbis Historial," 1578.

I.

"Come! let us seek for the fountain enchanted
That lies 'mid Floridian woodlands afar,
Neither by hardships nor terrors be daunted
'Till we shall come where its bright waters are."

II.

So spake De Leon, his standard out flinging
High o'er his band from the far land of Spain,
As they entered the forest with melody ringing,
To seek for the mystical fountain in vain.

III.

Under the jasmine vine glittered their lances,
O'er broad savannahs their corslets glanced bright;
'Twas such a picture as one often fancies,
Reading some ringing old ballad by night.

IV.

The South-wind came faint with the perfume of flowers,
Lightly the moss from the gnarled oak-trees hung;
Violets—daughters of April's first showers—
Peeped forth, while o'er them the mocking-bird sung.

V.

Thro' the long summer day still pressed they forward,
Tracking the forest untrodden before,
'Till round them darkly the shades of eve lowered,
Nor yet had gained they the famed fountain's shore.

VI.

Day after day, thro' the dim forest arches,
Sought they the fabulous "Fountain of Youth,"
Bearing up bravely 'gainst dangers and marches,
Ah! had they sought not a dream but a truth.

VII.

Month after month they sailed round the islands,
Lying like gems in the blue tropic main;
Marched thro' the Everglades up to the highlands,
Seeking the youth-giving fountain in vain.

VIII.

As in the desert there glitter clear fountains,
When we are tortured with heat, and with thirst,
So from the sea-shore e'en unto the mountains,
Still the same story the Indians rehearsed.

IX.

Told of a sweet fount that ever is springing,
Under a mighty magnolia-tree's shade.
That up to heaven its great boughs was flinging,
While with its snow blooms the light breezes played,

X.

Told how its clear-flowing waters had power
To drive all the sorrows of age far away,
And bear the worn man in a single glad hour,
Back to the joyance of youth's sunny day.

XI.

A Lethe, whose waters tho' drowning all sorrow,
Yet left us the memory of youth's early love,

Of the hopes and pure pleasures from which we may borrow.
A dream of the rapture that waits us above.

XII.

Long thro' the forest's wild mazes they wandered,
Seeking the mystical Fountain of Youth;
Days, weeks and months thus they wasted and squandered,
Seeking alas! but a dream not a truth!

XIII.

So all thro' life, though disheartened and weary,
Seek we some dream that beguiled us in youth,
Striving to find it thro' cares dark and dreary,
Seeking alas! but a dream, not a truth.

CLARENCE SINCLEAR.

WEREWOLVES AND SWAN-MAIDENS.

Under this title the August number of the *Atlantic Monthly* has an exceedingly interesting article—much too long to be reproduced here—in which the origin and philosophy of several strange superstitions of the middle ages, some of which linger even yet, are very learnedly and ingeniously elucidated. Leaving out of view here the author's curious explanations and speculations, we copy a few of the wonderful tales which obtained almost universal credence two or three centuries ago:

THE WEREWOLF.

A terrible case at a village in Auvergne has found its way into the annals of witchcraft. "A gentleman while hunting was suddenly attacked by a savage wolf of monstrous size. Impenetrable to his shot, the beast made a spring upon the helpless huntsman, who in the struggle luckily, or unluckily for the unfortunate lady, contrived to cut off one of its fore-paws. This trophy he placed in his pocket, and made the best of his way homewards in safety. On the road he met a friend, to whom he exhibited a bleeding paw, or rather (as it now appeared) a woman's hand, upon which was a wedding-ring. His wife's ring was at once recognized by the other. His suspicions aroused, he immediately went in search of his wife, who was found sitting by the fire in the kitchen, her arm hidden beneath her apron, when the husband, seizing her by the arm, found his terrible suspicions verified. The bleeding stump was there, evidently just fresh from the wound. She was given into custody, and in the event was burned at Riom, in presence of thousands of spectators.*

A WEREWOLF CURED.

Sometimes a werewolf was cured merely by recognizing him while in his brute shape. A Swedish legend tells of a cottager who, on entering the forest one day without recollecting to say his *Pater Noster*, got into the power of a Troll, who changed him into a wolf. For many years his wife mourned him as dead. But one Christmas eve the old Troll, disguised as a beggar-woman, came to the house for alms; and being taken in and kindly treated, told the woman that her husband might very likely appear to her in wolf-shape. Going at night to the pantry to lay aside a joint of meat for to-morrow's dinner, she saw a wolf standing with its paws on the window-sill, looking wistfully in at her. "Ah, dearest," said she, "if I knew that thou wert really my husband, I would give thee a bone." Whereupon the wolf-skin fell off, and her husband stood before her in the same old clothes which he had on the day that the Troll got hold of him.

THE MARA OR NIGHTMARE.

In Denmark it was believed that if a woman were to creep through a colt's placental membrane stretched between four sticks, she would for the rest of her life bring forth children without pain or illness; but all the boys would in such case be werewolves, and all the girls Maras, or nightmares.

It is, perhaps, needless to state that in the personality of the nightmare, or Mara, there was nothing equine. The Mara was a female demon, who would come at night and torment men or women, by crouching on their chests or stomachs and stopping their respiration. The scene is well enough represented in Fuseli's picture, though the frenzied-looking horse which there accompanies the demon has no place in the original superstition. A Netherlandish story illustrates the character of the Mara. Two young men were in love with the same damsel. One of them, being tormented every night by a Mara, sought advice from his rival, and it was a treacherous counsel that he got. "Hold a sharp knife with the point towards your breast, and you'll never see the Mara again," said this false friend. The lad thanked him, but when he lay down to rest he thought it as well to be on the safe side, and so held the knife handle downward. So when the Mara came, instead of forcing the blade into his breast, she cut herself badly, and fled howling.

In a Danish legend, the Mara betrays her affinity to the Nixies or Swan-Maidens. A peasant discovered that his sweetheart was in the habit of coming to him by night as a Mara. He kept strict watch until he discovered her creeping into the room through a small knot-hole in the door. Next day he made a peg, and after she had come he drove in the peg, so that she was unable to escape. They were married and lived together many years; but one night it happened that the man, joking with his wife about the way he

* Williams, Superstitions of Witchcraft, p. 179. See a parallel case of a cat-woman, in Thorpe's Northern Mythology, II. 26.

had secured her, drew the peg from the knot-hole that she might see how she entered the room. As she peeped through, she suddenly became quite small, passed out as she had formerly come in, and was never seen again.

MERMAIDS AND SWAN-MAIDENS.

Raymond, Count de la Forêt, of Poitou, having by an accident killed his patron and benefactor during a hunting excursion, fled in terror and despair into the deep recesses of the forest. All the afternoon and evening he wandered through the thick dark woods, until at midnight he came upon a strange scene. All at once "the boughs of the trees became less interlaced, and the trunks fewer; next moment his horse, crashing through the shrubs, brought him out on a pleasant glade, white with rime, and illumined by the new moon; in the midst bubbled up a limpid fountain, and flowed away over a pebbly floor with a soothing murmur. Near the fountain-head sat three maidens in glimmering white dresses, with long waving golden hair, and faces of inexpressible beauty." One of them advanced to meet Raymond, and, of course, they were bethrothed before day-break. In due time the fountain-nymph became Countess de la Forêt, but her husband was given to understand that all her Saturdays would be passed in strictest seclusion, upon which he must never dare to intrude, under penalty of losing her forever. For many years all went well, save that the fair Melusina's children, were, without exception, misshapen or disfigured. But becoming suspicious, the Count went one Saturday to Melusina's private apartments, and looking through the key-hole of the bath-room saw the Countess, transformed from the waist downward into a fish, disporting herself like a mermaid in the water.

In the majority of these legends, however, the Apsaras, or cloud-maiden, has a shirt of swan's feathers, which plays the same part as the wolfskin cape or girdle of the werewolf. If you could get hold of a werewolf's sack and burn it, a permanent cure was effected. No danger of a relapse, unless the Devil furnished him with a new wolfskin. So the swan-maiden kept her human form as long as she was deprived of her tunic of feathers. Indo-European folk-lore teems with stories of swan-maidens forcibly wooed and won by mortals who had stolen their clothes. A man travelling along the road passes by a lake where several lovely girls are bathing; their dresses, made of feathers curiously and daintily woven, lie on the shore. He approaches the place cautiously and steals one of these dresses. When the girls have finished their bathing, they all come and get their dresses and swim away as swans; but the one whose dress is stolen must needs stay on shore and marry the thief. It is needless to add that they live happily together for many years, or that, finally, the good man accidentally leaves the cupboard-door unlocked, whereupon his wife gets back her swan-shirt, and flies away from him, never to return.

But it is not always a shirt of feathers. In one German story, a nobleman hunting deer finds a maiden bathing in a clear pool in the forest. He runs stealthily up to her and seizes her necklace, at which she loses the power to flee. They are married, and she bears seven sons at once, all of whom have gold chains about their necks, and are able to transform themselves into swans whenever they like.

RED JAMES.

The mermaid's cap has contributed its quota to the superstitions of witchcraft. An Irish story tells how Red James was aroused from sleep one night by noises in the kitchen. Going down to the door, he saw a lot of old women drinking punch around the fireplace, and laughing and joking with his housekeeper. When the punch-bowl was empty, they all put on red caps, and singing

"By yarrow and rue,
And my red cap too,
Hie me over to England,"

they flew up the chimney. So Jimmy burst into the room, and seized the housekeeper's cap, and went along with them. They flew across the sea to a castle in England, passed through the keyholes from room to room and into the cellar, where they had a famous carouse. Unluckily Jimmy, being unused to such good cheer, got drunk, and forgot to put on his cap when the others did. So next morning the lord's butler found him dead-drunk on the cellar-floor, surrounded by empty casks. He was sentenced to be hung without any trial worth speaking of; but as he was carted to the gallows, an old woman cried out, "Ach, Jimmy alanna! Would you be after dyin' in a strange land without your red birredh?" The lord made no objections, and so the red cap was brought and put on him. Accordingly when Jimmy had got to the gallows and was making his last speech for the edification of the spectators, he unexpectedly and somewhat irrelevantly exclaimed, "By yarrow and rue," etc., and was off like a rocket, shooting through the blue air *en route* for old Ireland.

CUT FLOWERS.

The first thing to be considered in arranging cut flowers is the vase.

If it is scarlet, blue, or many-colored, it must necessarily conflict with some hue in your bouquet. Choose rather pure white, green, or transparent glass, which allows the delicate stems to be seen. Brown Swiss-wood, silver, bronze, or yellow straw conflict

with nothing. The vase must be subordinate to what it holds.

A bowl for roses. Tall-spreading vases for gladiolus, fern, white lilies, and the like. Cups for violets and tiny wood flowers. Baskets for vines and gay garden blossoms. A flower-lover will in time collect shapes and sizes to suit each group.

Colors should be blended together with neutral tints, of which there are abundance—whites, greys, purples, and tender greens—which harmonize the pinks, crimsons, and brilliant reds into soft unison.

Certain flowers assort well only in families, and are spoiled by mixing. Of these are balsams, hollyhocks, and sweet peas, whose tender liquid hues are as those of drifting sunset clouds. Others may be massed with good effect. In arranging a large basket or vase it is well mentally to divide it into small groups, making each group perfectly harmonious with itself, and blending the whole with green and delicate colors. And, above all, avoid stiffness. Let a bright tendril or spray of vine spring forth here and there, and wander over and around the vase at its will.

The water should be warm for a winter vase; cool, but not iced, for a summer one. A little salt, or a bit of charcoal, should be added in hot weather, to obviate vegetable decay, and the vase filled anew each morning. With these precautions your flowers, if set beside an open window at night, will keep their freshness for many hours, even in July, and reward by their beautiful presence the kind hand which arranged and tended them.—*Scribner's Monthly.*

VITALITY OF AMERICAN WOMEN.

The *National Medical Journal* has a paper on the Vitality of American Women, from the pen of S. L. Loomis, A. M., M. D., Professor of Chemistry in the Howard University, which claims that the present modes of education have much to do with the decay of physical vigor in American women. Mental labor—brain work—says Dr. Loomis, consumes the vital energies the most rapidly of any occupation that can engage the human being. In recapitulating at the close of the article, the following statements are made:

1. A child should not enter a school-room before eight years of age for the purpose of study.

2. From eight to twelve, no studies involving close reasoning should be allowed. The hands, feet, eyes, ears, and body generally should have careful instruction. Constant physical activity is the normal condition of a child, and any effort to abridge or suppress this must result disastrously; this activity is absolutely necessary for the circulation of the blood. But very few persons can stand absolutely still for twenty minutes without fainting. The contraction of the muscles, so necessary for the circulation of the blood, being wanting, the heart is not sufficiently supplied, and syncope follows. Hence the absurdity and utter impossibility of keeping children still.

3. From twelve to fourteen, health should be the first object; all else subservient.

4. At fifteen, education should begin in earnest, to be completed generally at twenty, or professionally at twenty-five.

However the reader may differ from Dr. L., he appears to have medical science, and the results of a long series of observations on his side. Brain and typhoid fevers, of a fatal type, no doubt, in innumerable instances, have been superinduced by too early and too exhaustive application to books and studies.

RECIPES.

To Prepare and Boil Rice.—Wash and gravel one pint of rice; add to it a quart and a pint of water, and a tablespoonful of common salt; boil over a quick fire for ten minutes, stirring occasionally; then pour off all or nearly all the water; cover the vessel, and put it on a *very slow fire*, and allow it to steam for fifteen minutes at least, stirring it occasionally. The rice will be soft or grainy, according to the quantity of water left on when put to steam, and the length of time allowed in the steaming.

Chow-Chow.—Chop fine two quarts of green tomatoes, two quarts of white onions, one dozen green peppers, one dozen green cucumbers, one large head of cabbage. Season with mustard and celery seed to suit the taste. Cover with the best cider vinegar. Boil two hours slowly, stirring continually. As soon as you take it from the stove add two tablespoonfuls of salad oil. Cover tight, and keep in a cool place.

Virginia Breakfast Cakes.—One and a half pints Indian meal, one teaspoonful salt, rub in a lump of butter the size of an egg; stir in half pint rich cream and two eggs well beaten. If not in a good batter, add sufficient new milk.

Tomato Omelette.—Peel and cut up one quart tomatoes with one tablespoonful butter, pepper and salt to taste; when nearly cooked, beat up five eggs; stir till it thickens.

Green Corn Fritters.—Twelve ears grated, a tablespoonful salt and pepper, one egg into two tablespoonfuls flour; mix into cakes and fry brown.

Corn Batter Cakes.—Boil and thicken with corn meal, one pint milk; beat two eggs and add, with a spoonful butter and two teaspoonfuls of baking powder.

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WALKER, EVANS & COGSWELL.

LAST NUMBER, VOLUME II.

This number completes the second year and Volume II. of our Magazine. On such occasions it is customary to say something—but we have no heart-rending appeals to make for continued support or for prompt payment to save us from the brink of starvation.

We thought that the Southern people wanted a really first class agricultural magazine, and that such a one would succeed. The result has proved that we judged aright. We have conscientiously labored to make THE RURAL CAROLINIAN superior to all its competitors; and the lavish praise which it has received at all hands, and its large and growing subscription list, show what others think of our efforts.

For ourselves, as the publishers, we claim but a very small part of the credit of the success. It is due largely to the superior ability brought to the work by the Editor, Col. D. H. Jacques, to Colonel D. Wyatt Aiken, and to the large and valuable contributions which we have received from the ablest writers of our country.

To these gentlemen we owe much, and to them we beg thus publicly to express our thanks and show our appreciation of their labors.

For the future we can promise, not only the same, but increased efforts. But we are willing that our future shall be judged by our past. If we have fulfilled our promises in the past, is it not likely that we will in the future?

FARM AND GARDEN CALENDAR FOR SEPTEMBER.

It should be understood that the following directions are given with special reference to the latitude of Charleston, and persons residing any considerable distance North or South of this place must make the necessary allowances for difference in the seasons—about five days for each degree of latitude.

AGRICULTURAL OPERATIONS.

Cotton picking is, of course, the most prominent item of plantation work for the month. Let this work be pressed with all your energy and force, so as to gather the lint as fast as the bolls open. You lose both in quantity and in quality by delay. The first pickings should be well sunned. Do not allow your hands to pull off the bolls in picking, as they are sometimes inclined to do; and avoid picking immediately after a shower. In all cases, where large quantities are stored in bulk, stir the heaps occasionally, and expose the cotton to the air to keep from heating. Keep the different qualities of cotton separate, so as to avoid selling mixed cotton for the price of the poorest portion of it.

——Make Hay, and save carefully all forage crops. You will not have too much, or, if you have any to spare, your neighbor will be glad to buy.

——Sorghum must be cut, ground, and the juice made into syrup; and let it be of the *best quality*. Save every blade and all the seed for feeding stock. See articles on Sorghum in several numbers of Volume I. of The Rural Carolinian.

——Turnips must be planted, if not already done, as the condition of the weather and soil may permit. See August number.

——The Small Grains must be put in largely, we repeat, if we would avoid adding famine to the other evils under which we labor. See article in last number on this subject, and on Clover in this number.

GARDEN WORK.

This month opens what may be called our second spring, and if we take advantage of it, we may have an abundance of most kinds of vegetables in our gardens during the fall and winter, especially here in the low country. Sometimes great care and frequent replantings are necessary to secure a stand, so hot is the sun and so violent the rains, but perseverance generally crowns our efforts with success. Our directions must be mainly the same as for last month. Most operations that were neglected or failed in August may, in this latitude, be repeated now.

——Cabbage must be transplanted for winter heading; also Cauliflowers and Broccoli. Sow European seed for spring cabbages. Plants from American seed are more apt to run to seed in the spring.

——Turnips and Kohl Rabi may be sown as directed in August number.

——Carrots, Beets, Swiss Chard, etc., if you failed to get a stand last month, may now be sown with better hope of success.

——Onions, for the main crop, if not already planted, may now be got in.

——Lettuce, Radishes, Spinach, Mustard, will do well planted this month; and, in the low country, Snap Beans are still in order for planting during the first week, and will do well if the fall be favorable.

——To protect tender young plants, as cabbage, beets, carrots, etc., from the sun and beating rains, set bushes between the rows, reclining a little over them; or lay bushes on crotches raised three or four feet above the bed.

——In the fruit garden budding may still be done, if there be sufficient growth to make the bark slip.

——Strawberry beds should now be prepared; and, if the weather favors, plant during the month, watering and shading the plants if necessary. When planting on a larger scale than the garden's limit permits, we prefer later planting. See article on "Strawberries," in the present number, and Answers to Inquiries.

——Prepare lands for orchards and vineyards. New land is best, and it need not be rich for either peaches or grapes. A stronger soil for apples and pears is desirable. November and December are the best months for planting trees and vines generally, but it is well to have the land prepared and the holes dug in advance.

——In the flower garden bulbs of the early flowering plants, taken up last spring, should be set out during the present month, including Snow Drops, Narcissus, Iris, Jonquils, Crocus and Hyacinths. Sow Stock, Pinks, Marigolds, Mignonette, and other hardy annual, biennial and perennial plants; and set out rose, geranium and other cuttings. The beauty of your winter and spring garden will depend much upon this month's operations.